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INDUSTRIAL WORLD

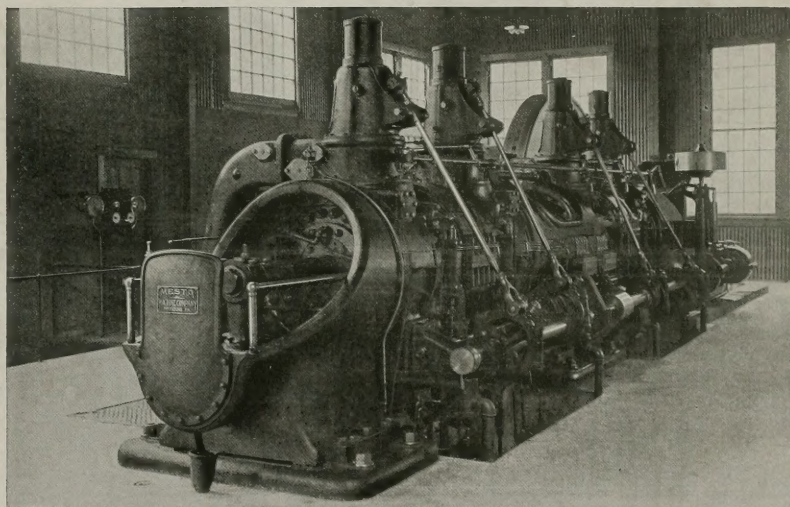
Published Weekly in the Interest of Iron, Steel, Coke and Allied Industries.

46th Year. No. 6.

PITTSBURGH, PA.

MONDAY, FEBRUARY 5, 1912

Power Plant Equipment



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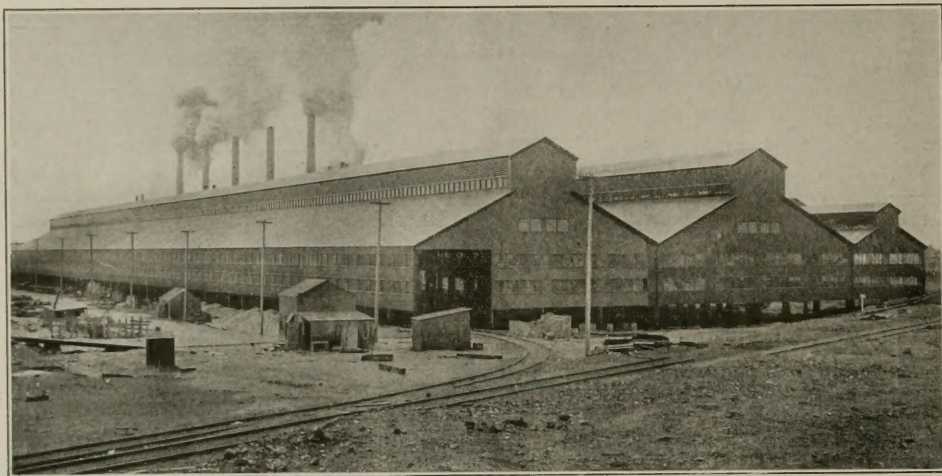
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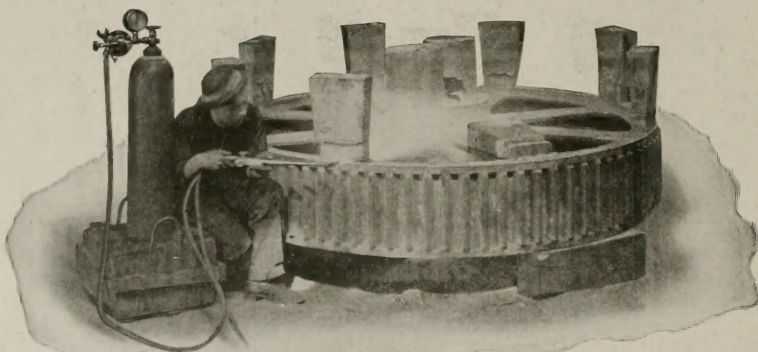
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STEEL CONSTRUCTION
BUILDINGS FOR INDUSTRIAL PLANTS A SPECIALTY

2

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SIMPLE
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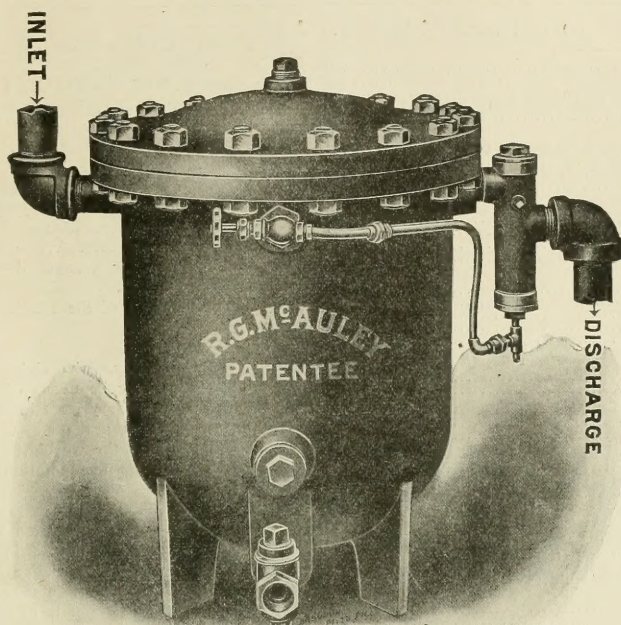
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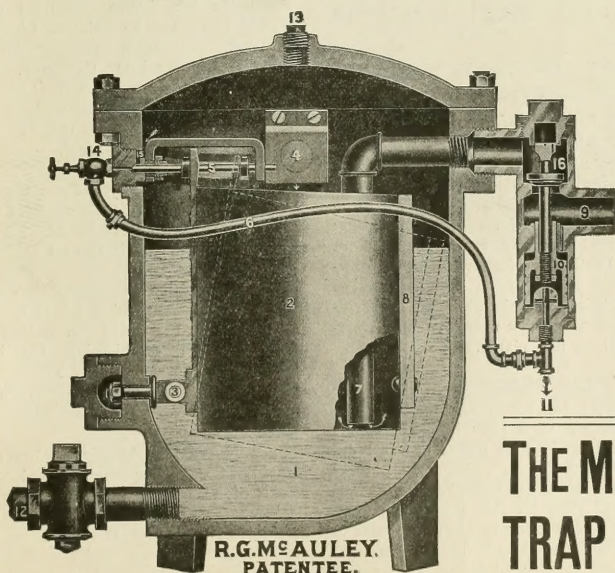
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FORTY-SIXTH YEAR.

PITTSBURGH, PA., FEB. 5, 1912.

NUMBER SIX.

INDEX OF LEADING ARTICLES AND DEPARTMENTS

NEWS—	
Equipment Matters: News of Pittsburgh District	153
Steel Corporation's Answer in Government's Dissolution Suit	154
Annual Banquet, Engineers' Society of Western Pennsylvania	155
Steel Corporation Ore Subsidiaries File Answer in Dissolution Suit; Report of Great Northern Ore Properties	164
STATISTICAL—	
Pig Iron Production, 1911: Official Report of American Iron & Steel Association	156
Quarterly Report, United States Steel Corporation	157
Pennsylvania State Statistics, Iron and Steel Products, Year 1910	158
German Iron Production	165
FEATURES—	
E. C. & M. Motor Field Rheostats (Ill.)	159
Electric Heating in Sweden	162
Steel Barge Line Project in St. Louis	163
"Universal Straighteners" Installed in Pittsburgh Mills (Ill.)	165
DEPARTMENTS—	
Personal	159
Reviews	160
Recent Patents	160
Death Record	161
Smoke Prevention	161
Trade Meetings: Pittsburgh Foundrymen's Association; Engineers' Society of Western Pennsylvania; Manufacturers and Contractors' Club; Electrical Boosters	161
Industrial Fires	161
National Conventions of the Coming Month	170
INDUSTRIAL SECURITIES—FINANCIAL—	
Stock Summary: Week's Sales in Leading Issues	166
Fiscal Matters	166
EDITORIAL—	
"The Steel Corporation's Defense"	170
"The Pig Iron Statistics"	171
"Stanley Accumulates More Nonsense."	171
"Twenty Years Ago"	172
THE MARKETS—	
Market Conditions in Pig Iron; Principal Sales of the Week	172
Coke Market	173
Crude and Finished Steel Products; Reports From Selling Centers	173
Range of Weekly Quotations in Pig Iron and Finished Product	174
"NEW BUYERS" DEPARTMENTS—	
Charters to New Corporations	167
New Construction and Extensions	178

Points on the Market

Car Orders Pending.—The steel car trade is figuring on 500 refrigerator and 500 automobile cars for the Grand Trunk, 2,500 for the Western Maryland, 2,500 for the Bessemer & Lake Erie, 100 for the Norfolk & Southern and 2,500 for the Northern Pacific. The St. Paul is to build in its own shops 100 new locomotives and 2,500 box cars. While eastern roads are fairly well supplied with equipment at present, the situation is just the reverse west of the Mississippi river.

Gary Coke Capacity.—The eighth of the ten batteries of coke ovens of the Steel Corporation at Gary went in operation Saturday, making the plant the largest of its kind in the world. Entire ten batteries will be in operation by March 1.

Merchant Pipe Inquiries.—Logan Natural Gas Company, Pittsburgh, is in the market for 40 miles of 12-inch line pipe and the Ohio Fuel Supply Company for 25 miles of 16-inch, deliveries to be made about May.

Northside Warehouse.—Contract was awarded last week by Frick & Lindsay Company, Pittsburgh, to McClintic-Marshall Construction Company, for structural steel work on Frick-Lindsay six-story warehouse to be erected on the Northside. Contract will require approximately 700 tons of steel.

Sault Ste. Marie Gates.—Penn Bridge Company, Pittsburgh, took contract for new set of lock gates in St. Marys river at Sault Ste. Marie, to cost \$125,000.

Steel Corporation Furnaces.—Carnegie Steel last week put another Edgar Thomson furnace on the active list, making 50 of its 59 furnaces blowing, the idle stacks being one each Edgar Thompson, Mingo, Edith, Neville, Zanesville, Niles and Steubenville with two Isabella.

Open Hearths at Aliquippa.—Jones & Laughlin Steel Company, started the fourth of its 250-ton tilting furnaces at its newly-completed open hearth plant at Aliquippa, Pa., at the close of the week. This puts the entire steel-making capacity at Aliquippa in operation, about 1,000 tons of ingots daily. Entire

Summary of General Iron and Steel Markets

PIG IRON THE ONLY UNCERTAIN FACTOR—SHADING IN FINISHED PRODUCTS RARE—CRUDE STEEL CONSUMPTION.

PIG IRON.—Market in steel making grades showed small tonnage in actual sales during the week, but heavy tentative inquiry. Prices still burdened with forebodings of freight rate and ore price changes; seemingly little likelihood of any advance in Pittsburgh district. Basic iron is being shipped East out of Pittsburgh district. Heavy inquiry for basic in Philadelphia and Ohio territory; Buffalo prices firm, Virginia furnaces giving slight concessions. Large buying of forge grades in South. Foundry iron in Pittsburgh and Valley markets shows firmer levels.

CRUDE STEEL.—Demand for billets and sheet bars for February delivery extraordinarily large; Carnegie Steel and large producers pressed for prompt shipments. Some billets shipped to Eastern Pennsylvania plants. Additional capacity has resumed. Prices held steady at \$20 for rolling billets, \$21 for sheet

and tin bars, with forging billets firmer at new price of \$28 mill.

COKE.—Connellsville supply of prompt coke is very short; prices remain up to \$1.90 and \$1.95 for spot furnace coke; contracts over six months closed at \$1.85. Putting in of a few furnaces drawing their supply from merchant ovens would bring on coke shortage. Difficulties in Connellsville over labor and starting of long idle plants.

FINISHED PRODUCT.—Commitments for structural material during January were very heavy. Reports of slight shading on plates in West denied. Car orders have slackened, but car builders continue to take large tonnages of steel for this month and next. Shading of \$1 a ton in some instances in black and galvanized sheets; merchant bars firm at 1.15c minimum. Pipe prices firmer in presence of heavy inquiries.

steel output for the first fortnight will go into sheet bars for company's tin mills. Rod mill and wire department at Aliquippa plant are running regularly, the only idle department being the blast furnaces, regarding which no announcement has been made.

Strike at Inland.—Sheet mills of Inland Steel Company, Chicago, are handicapped by strike of workmen, which occurred Wednesday, over wage adjustment.

Texas Rail Order.—Northern Texas Traction Company, Ft. Worth, Tex., has bought 3,500 tons of steel rails and plates, from Maryland Steel Company. Order is for immediate delivery.

Lackawanna's Rail Order.—Delaware, Lackawanna & Western's rail order is divided: 5,000 tons to Pennsylvania Steel, 5,000 tons to Bethlehem, 15,000 tons to Lackawanna Steel Company.

U. S. Steel a Possible Iron Buyer.—It is predicted in Pittsburgh that Steel Corporation will enter the market the coming month for a block of Bessemer iron, if demand for steel shows any further increase.

Steel Rates Before Interstate Commission.—Acting for all steel manufacturers in the Pittsburgh district, the Pittsburgh Steel Company complained to the Interstate Commerce Commission at Washington, on January 31, that the Pittsburgh & Lake Erie and Lake Shore railroads and connecting lines charged excessive rates on ore from Ashtabula Harbor to the Pittsburgh district, and alleged that the rates on finished and semi-finished steel to outside points were unreasonable.

PORT ARTHUR STEEL PLANT.

Mackenzie & Mann Project for North Shore Port on Lake Michigan.

Acting for Mackenzie & Mann and an English syndicate, J. M. Fraser, manager of the Atikokan Iron Company, a Mackenzie & Mann concern, has submitted to the city of Port Arthur, Ont., an application for the establishment at that place of a \$5,000,000 plant. The city will give a site of 400 acres at Barepoint, on Lake Superior.

Mr. Fraser estimates that in the iron ore areas, of which Mackenzie & Mann have control and for which they are seeking development is ore enough to keep a steel plant running 175 years. These include the Atikokan, Moose Mountain and Nipigon areas.

Ohio Retail Furniture Dealers meet, Dayton, O., February 13-15.

EQUIPMENT NEWS OF THE DISTRICT.

New Plant at Braeburn.

The Manganese Steel Rail Company has about completed the building and equipment of its new plant at Braeburn, Pa., and will commence operations during the month. The company will manufacture chain, car and special forgings. The office of the company is located at 30 Church street, New York.

Installation at Ambridge.

The Snow Steam Pump Company, with offices in the Oliver building, Pittsburgh, is installing a crank and flywheel hydraulic pressure pump to operate against 1,400 pounds pressure, in the works of the American Bridge Company, at Ambridge, Pa.

Cranes for Keokuk, Iowa.

Alliance Machine Company, Alliance, O., has received an order for three unusually heavy cranes for the Hydraulic Engineering Company, Keokuk, Iowa. One is 75-ton capacity, for powerhouse use; the two others are 150 tons each. The company claims these will be the largest cranes for power house installation in the country. The company recently installed 150-ton cranes at the Johnstown plant of the Cambria Steel Company and the Aliquippa plant of the Jones & Laughlin Steel Company.

For New Reservoir.

The City of Pittsburgh will ask for estimates during the month on the construction of a 150,000,000 gallon reservoir in Shaler township, estimated cost \$1,000,000; a new brick pumping station, 120x180 feet, at Aspinwall, with pumping equipment having capacity of 100,000,000 gallons daily, estimated cost \$250,000, and a 30-inch steel rising main 7,000 feet long, for the Southside, estimated cost \$80,000.

Tool Grinders for Export.

The Woods Engineering Company, Alliance, O., has taken an order for the shipment of a tool and cutter grinder to Yokahama, Japan.

Equipment at Aspinwall.

Contracts were awarded last week by the city of Pittsburgh for new equipment for the Aspinwall pumping station as follows:

Sidney Wheelhouse, Pittsburgh, representative of the Hoover, Owens & Rentschler Company, Hamilton, Ohio, for electric generating equipment and apparatus, including 12x21-inch high speed non-releasing gear Hamilton Corliss engine, direct connected to a Fort Wayne 100 kw. generator, and a suitable switch-

board, for \$5,075. The same company has the contract for moving and installing an engine and generator set at present in the Montrose pumping station, to be used as a spare unit in the Aspinwall station. Inspection and testing of boilers was awarded to the Pittsburgh Testing Laboratory, \$924; Cleveland Crane & Engineering Company, Cleveland, one 20-ton crane, 60-foot span and one 20-ton crane, 18-foot span; Scottsdale Foundry & Machine Company, discharge chambers for Howard street pumping station, \$946; Thomas Carlin Sons' Company, suction cage for Montrose pumping station, \$503; Kelly-Springfield Road Roller Company, two seven-ton asphalt rollers, \$4,000.

DeLaval Turbine Pumps.

A slip in proof reading in last week's issue of the INDUSTRIAL WORLD made this paper say, unintentionally, that "a water famine was started at St. Louis recently," when what was intended was that "a water famine was averted," in speaking of the recent installation of DeLaval turbine-driven pumps at the St. Louis water works. DeLaval machines are eminently fitted for "averting" water famines, but even the keenest competitor in that line would not consider the equipment adapted to "start" any famines.

And the printer is willing to admit the word "averted" was typewritten, and not manuscript copy, at that!

Roofing Contract.

The Baldwin Locomotive Works has awarded the Reinforced Tile Roof Company, of Youngstown, O., the contract for roofing its new erecting shop at Ed-dystone, Pa., with Re-ti-co tile. The contract involves approximately five and one-half acres of roof. The Reinforced Tile Roof Company operates plants at Youngstown and Wilmington, Del.

Water Project at South Fork, Pa.

The South Fork Water Company will erect a water filtration system at South Fork (Cambria county, Pa.), to cost \$20,000, from plans by Chester & Fleming, Union Bank building, Pittsburgh, Pa.

Westinghouse Equipment for Los Angeles.

The Westinghouse Electric & Manufacturing Company has been awarded the contract for the electric equipment of the power house and sub-station for the Los Angeles aqueduct, which is to be 250 miles long. The improvement will cost about \$24,000,000.

The contract awarded the Westinghouse company calls for three 13,500-

horsepower generators, 10 4,200-horsepower transformers for raising the generator voltage from \$6,600 to 60,000 volts, at which it will be transmitted to a sub-station near the city; nine 6,700-horsepower transformers for reducing the transmission voltage at the end of the line. These generators are of the latest water wheel type developed by the Westinghouse Company and are of unusually large size. The transformers are of the oil insulated, water-cooled

type, especially adapted for this class of work. The contract imposes a penalty of several hundred dollars a day for failure to meet the delivery dates agreed upon. Shipment will begin August 1 and be completed the first part of November. It will furnish work for a good portion of the East Pittsburgh shops for some months. The main power plant is located at San Francisco and the sub-station is located at Los Angeles, a distance of 47 miles.

STEEL CORPORATION'S DENIAL IS FILED IN GOVERNMENT'S DISSOLUTION SUIT.

ABSOLUTE denial of violations of the anti-trust law is made by the United States Steel Corporation, its subsidiaries and directors in their answers which were filed at Trenton, N. J., February 1, in the United States District Court, to the Government's dissolution suit. Five separate answers were filed among 33 defendants.

The effect of its organization, the Corporation declares, has been to cheapen production, effect economies and increase foreign trade from \$8,000,000 to \$60,000,000 annually within 10 years. So long has the Government acquiesced in its existence, the answer says, that it is now too late, as a matter of equity, to insist that its organization was illegal.

Nothing was withheld from Mr. Roosevelt by Messrs. Gary and Frick on November 4, 1907, the answer says, when they sought his consent to the Corporation's proposed purchase of the Tennessee Coal, Iron & Railroad Company; nor were the so-called Gary dinners productive of agreements to regulate prices.

The answers filed are those of the Steel Corporation, Andrew Carnegie, John R. Rockefeller, Sr., John D. Rockefeller, Jr., and Edmund C. Converse. The Rockefellers made a joint answer.

The Messrs. Rockefeller deny they had an active part in the formation or management of the Corporation, the elder Rockefeller declaring that he has had no immediate relation to the iron or steel business since 1901.

Each of the defendants prays that the suit be dismissed.

The answer is made in the name of the United States Steel Corporation and its various subsidiary companies, and it is joined in by the following individuals: J. Pierpont Morgan, Elbert H. Gary, Charles M. Schwab, Charles Steele, Henry C. Frick, James Quayley, William H. Moore, James H. Moore, Percival Roberts, Jr., Daniel G. Reid, Norman B. Ream, George W. Perkins and Peter A. B. Widener. The array of counsel in-

cludes Lindabury, Depue & Faulke, as solicitors, and Joseph H. Choate, John G. Johnson, Francis Lynde Stetson, David A. Reed, Raynal C. Bolling and Richard V. Lindabury as counsel.

WORK AT GARY FROZEN UP.

Unprecedented Weather Conditions Halt Construction Operations.

Construction work at Gary, Ind., has practically been suspended owing to the severe cold weather and building operations in that vicinity will not be resumed until the weather moderates. The ground is frozen to a depth of over four feet, making excavating practically impossible on several contracts in which Pittsburgh parties are interested.

Similar conditions prevail in Northern New York, closing down operations on the State barge canal and other outside work of a similar nature.

MOLDERS QUIT AT STEELTON.

Minor Labor Trouble at Pennsylvania Steel Company's Plant.

The molders employed in the steel foundry of the Pennsylvania Steel Company, at Steelton, Pa., went on strike January 25 following a reduction of 34, 31 and 12 cents per foot on certain kinds of work.

These men, it is said, were notified that the cut of 34 cents was on \$1.84, 31 cents on \$1.31 and 12 cents per foot on a job which was paying 54 cents per foot. The reason given for the cut was that it was necessary in order to operate certain departments.

Sydney (South Wales) iron workers refused to allow dedication of new Labor Temple, because it contains "non-union iron." Offending material will be ripped out.

National Hardwood Manufacturers' Association was in session last week at Cincinnati, O.

PROTESTS ON TARIFF.

Machine Tool Manufacturers Keep the Washington Wires Hot.

Following a conference of machine tool interests January 29 at the office of the Cincinnati Milling Machine Company, Cincinnati, a delegation was sent to Washington to protest in person against machine tools being placed on the free list, and machine tool manufacturers throughout the country were urged by wire to telegraph vigorous protests to their congressmen.

The delegation which carried the protest of the Cincinnati meeting to Washington in person, included Fred Geier, president, and C. Wood Walter, secretary and treasurer, of the Cincinnati Milling Machine Company; J. B. Doan, vice president and general manager, and Robert Alter, of the American Tool Works; R. K. LeBlonde, president of the R. K. LeBlonde Machine Tool Company; Perrin G. March, president of the Cincinnati Shaper Company and of the Cincinnati Gear Cutting Machine Company; A. H. Tuechter, president of the Cincinnati Bickford Tool Company; Murray Shipley, vice president and secretary of the Lodge & Shipley Machine Tool Company and secretary of the Dietz Machine Tool Company; George Langen, manager of the Cincinnati Planer Company, and Alfred Nippert, of the John B. Morris Machine Tool Company.

A "general alarm" was sent out by telegraph to machine tool manufacturers throughout the country on January 27 by Charles E. Hildreth, of Worcester, Mass., secretary of the National Machine Tool Builders' Association, which read as follows:

New steel schedule places many manufactures, including machine tools, on the free list. If present duty is removed serious harm through importations is certain, resulting in a revolutionary disturbance of business, and necessitating large reductions in wages. Action in Congress should be deferred until a careful and scientific investigation be made of cost conditions here and abroad. The bill comes to vote in the House Monday noon.

Congressman Allen, of Cincinnati, telegraphed the Cincinnati interests from Washington, on January 29, as follows:

Bill will not cause the slightest injury to your industry, as exports of machine tools last year amounted to almost \$10,000,000; imports were less than \$200,000.

The telegram evoked instant protest, and a flood of indignant telegrams to Representative Allen. Mr. Geier, in a lengthy statement given out for publication, which compared German costs and

American costs of production, concluded with this assertion:

Another objection to the Palmer bill is that it discriminates. While machine tools are put on the free list, I understand wood-working machinery is left with 25 per cent ad valorem protection, and such articles as bar iron, cut nails, hoops, etc., which require only an inferior grade of labor, are left protected. Why should free trade be applied to machine tools and not to those articles? Why should articles manufactured at a high labor cost, and which has increased steadily in recent years, go on the free list, while others made out of a lower labor cost are left protected.

Another discrimination of the bill is that it puts machine tools in the same class with articles already protected by patents, such as typewriters, linotype machines and cash registers. Machine tools have practically no patent protection.

IN THE VALLEYS.

Finishing Mills at Youngstown.

It was announced last week at Youngstown that the management of the Youngstown Sheet & Tube Company had decided on part of the finishing mill capacity which will be added to the East Youngstown plant of the company in connection with the open hearth furnaces and other improvements. The management of the Sheet & Tube Company has determined in favor of constructing a small plate mill and 8- and 10-inch hoop mills, and the directors of the company will be asked to ratify the decision.

This will not be all the finishing mill capacity to be built at East Youngstown, but this much has been definitely decided upon. One of the reasons for deciding in favor of the hoop mills is that the plant at present has not enough skelp mill capacity.

The 10-inch hoop mill will manufacture keg and barrel hoops and light bands. The eight-inch mill will turn out lighter hoops and various jobbing sizes.

Work on the foundations for the open hearth furnaces at East Youngstown has been delayed on account of the cold weather. President Campbell announces that work on the pile foundations will be begun the coming week.

The New Brier Hill Company.

Jacob D. Waddell, sales manager of the Empire and Gary Iron & Steel Companies, has been chosen for the position of general sales manager for the newly-formed Brier Hill Steel Company, at Youngstown. The formal election of officers of the company took place January 29.

Mr. Waddell has been a resident of Niles for the past seven years and has been associated with the Empire Iron

ENGINEERS' SOCIETY OF WESTERN PENNA.

HEARS "EFFICIENCY" IDEAS AT ANNUAL BANQUET

THE 1912 banquet of the Engineers' Society of Western Pennsylvania, held on the evening of January 27 at the Ft. Pitt Hotel, Pittsburgh, registered the high mark in attendance in the history of the society. Members guests and ladies present numbered nearly 400. The general subject of the evening's formal and informal speech-making was "Efficiency"—that much-abused catch-word being handled occasionally in the lighter vein.

The toastmaster of the evening was the retiring president of the Society, Dr. Walther Riddle. The formal toasts included Dr. Earl Barnes, of Philadelphia, on "Your Efficiency and Mine"; James H. Harlow, of Pittsburgh, on "Our Society"; Charles F. Scott, formerly prominent in electrical engineering development in Pittsburgh, on "Work, or a Professorship," and Walter O. Snelling, of the United States Bureau of Mines (who is chairman of Pittsburgh Section of the American Chemical Society), on "The Chemist and the Engineer."

Late in the evening, there were delightful informal talks by James O. Handy, the newly-installed president of the Society, and Dr. John A. Brashear.

The retiring president, Dr. Riddle, shone in the toastmaster's role. Opening the evening's speaking, he told of the services of the engineering profession to Pittsburgh and Pittsburgh industries; he referred to the well-known earnestness with which the engineer went about his task. He did not bank heavily, he said, on "the adoption of alliterative mottoes to boost a town." Said he: "Such axioms as 'Pittsburgh Promotes Progress' are pretty things—they're good things to put on Christmas

cards; but the man who would bear his share in the promotion of a community's progress, must have the love of the community behind his shirt."

Dr. Barnes, the principal speaker of the evening, preached against "this obsession of 'Product' that possesses all of us."

"We all think in terms of product—we all worship product," declared the speaker. "Life has to be something beside mere efficiency for product—life must be lived for actual, significant, values. A man who lives in the safe world of science, lives a poor, pitiful, matter-of-fact life, great though his works be."

Mr. Harlow, one of the charter members of the society, told of the birth of the Engineers' Society of Western Pennsylvania, in December, 1879, following a visit of the American Society of Mechanical Engineers to Davis Island Dam, on the Ohio, at that time under construction. There were reminiscences of the veterans of the engineering profession in Pittsburgh—during which the speaker paid a tender tribute to the late William Metcalf. Professor Scott, now a member of the Yale faculty, told something of the work of the school of engineering at that institution, and was followed by Mr. Snelling, who bespoke for the chemist a closed co-operation with the engineering fraternity in the future than in the not far distant past.

From President Handy came a series of parodies on modern "efficiency" preaching, from which the speaker drew the moral that there must be moderation in the enforcement of any doctrine; and the evening concluded with a kindly talk from Doctor Brashear, in which reminiscence sparkled.

& Steel Company as secretary and treasurer until the consolidation with the Gary Iron & Steel Company, when he was elected general sales manager.

Those in a position to know say that there is no foundation for the report that Joseph A. McDonald, who recently resigned as superintendent of the Ohio works of the Carnegie Company, at Youngstown, had been decided upon as superintendent of the new steel mills, to be built at Brier Hill.

The present merger, as it stands, still has considerably more pig iron capacity than can be absorbed by the Empire and Thomas mills, and will not wholly take the two furnaces out of the open market. There are reports of contem-

plated enlargements of the specialty and jobbing departments of the Empire Iron & Steel Company.

Patents to Youngstown Men.

In the patent report of the INDUSTRIAL WORLD, on another page of this issue, are noted patents granted to two Youngstown (O.) men. H. E. White, chief engineer at the plant of the General Fireproofing Company, has secured a patent on a new method of making expanded metal structures, and has assigned the same to the General Fireproofing Company. W. D. Forsyth, formerly manager of the Concrete Pressed Steel Company, has secured a patent on manufacturing expanded metal.

TOTAL PRODUCTION OF PIG IRON IN THE UNITED STATES IN 1910 AND 1911.

Statistics collected from the Manufacturers by The American Iron and Steel Association, all in Gross Tons of 2,240 pounds.

Production in 1911, 23,649,344 Gross Tons; in 1910, 27,303,567 Tons; in 1909, 25,795,471 Tons; and in 1908, 15,936,018 Tons.

Total Production of All Kinds of Pig Iron.

TOTAL PRODUCTION OF PIG IRON BY STATES.

States	Blast Furnaces			Production—Gross tons. (Includes spiegeleisen, ferro-manganese, ferro-silicon, ferro-titanium, etc.)		
	Dec. 31, 1911.			First half of 1911.		
	In.	Out.	Total.	First half of 1911.	Second half of 1911.	Total for 1911.
Massachusetts	1	1	2	6,424	3,225	9,649
Connecticut	0	1	2			
New York	15	13	29	833,467	729,289	1,562,756
New Jersey	1	0	8	39,277	1,386	40,663
Pennsylvania	81	91	173	4,822,832	4,984,002	9,806,834
Maryland	3	2	5	131,531	124,285	255,816
Virginia	7	7	14	159,996	133,646	293,642
Georgia	0	0	4	1,200		1,200
Texas	0	0	4			
Alabama	17	22	49	809,795	902,648	1,712,443
West Virginia	3	3	6	130,455	161,017	291,472
Kentucky	3	2	5	46,493	45,709	92,202
Tennessee	9	8	17	165,722	158,926	324,648
Ohio	35	44	79	2,740,142	2,570,168	5,310,310
Illinois	16	14	30	882,807	1,225,195	2,108,002
Indiana	6	7	13	552,056	611,876	1,163,932
Michigan	7	8	15			
Wisconsin	2	4	7	147,477	129,330	276,807
Minnesota	1	0	1			
Missouri	1	1	2			
Colorado	3	3	6			
Oregon	0	0	1	197,322	198,646	395,968
Washington	0	0	1			
California	0	0	0			
Total	212	231	466	11,666,996	11,982,348	23,649,344

PRODUCTION OF BITUMINOUS COAL AND COKE PIG IRON.

New York	15	13	9	22	833,467	729,289	1,562,756
New Jersey	1	0	7	7	39,277	1,386	40,663
Pennsylvania	72	82	46	128	4,671,653	4,902,093	9,573,746
Maryland	3	2	2	4	130,991	124,285	255,186
Virginia	6	6	15	21			
Georgia	0	0	2	2	160,397	131,750	292,147
Texas	0	0	3	3			
Alabama	16	20	25	45	788,895	880,991	1,679,886
West Virginia	3	3	1	4	130,455	161,017	291,472
Kentucky	2	1	6	7	46,493	47,415	93,908
Tennessee	8	7	11	18	164,482	156,460	320,942
Ohio	34	43	30	73	2,739,517	2,568,891	5,308,408
Illinois	16	14	10	24	882,807	1,225,195	2,108,002
Indiana	6	7	2	9			
Michigan	2	2	2	4	542,193	624,044	1,166,237
Wisconsin	1	3	3	6			
Minnesota	1	0	1	1			
Missouri	1	0	1	1			
Colorado	3	3	3	6	226,431	221,643	448,074
Washington	0	0	1	1			
Total	190	206	180	386	*11,356,634	*11,784,459	*23,141,093

* Includes small quantities of ferro-alloys made with coke and electricity.

ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

New York	0	0	5	5			
New Jersey	0	0	1	1			
Pennsylvania	6	6	23	29	149,227	80,348	229,575
Total	6	6	29	35	149,227	80,348	229,575

PRODUCTION OF CHARCOAL PIG IRON BY STATES.

Massachusetts	1	1	1	2			
Connecticut	0	1	2	3	6,424	3,225	9,649
New York	0	0	2	2			
Pennsylvania	3	3	4	7	1,952	1,561	3,513
Maryland	0	0	1	1	1,429	1,896	3,325
Virginia	1	1	3	4			
Alabama	1	2	2	4	20,900	11,657	32,557
Georgia	0	0	2	2			
Texas	0	0	1	1	1,574	3,760	5,334
Kentucky	1	1	0	1			
Tennessee	0	1	0	1			
Ohio	1	1	1	2	625	1,277	1,902
Michigan	5	6	6	12	98,232	62,652	160,884
Wisconsin	1	1	0	1			
Missouri	1	1	0	1	29,999	31,513	61,512
Oregon	0	0	1	1			
California	0	0	0	0			
Total	16	19	26	45	*161,135	*117,541	*278,676

* Includes small quantities of pig iron and ferro-alloys made with charcoal and electricity.

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Bituminous	190	206	180	386	11,356,634	11,784,459	23,141,093
Anth. & anth. & coke	6	6	29	35	149,227	80,348	229,575
Charcoal	16	19	26	45	161,135	117,541	278,676
Total	212	231	235	466	11,666,996	11,982,348	23,649,344

Miscellaneous Pig Iron Statistics.

PRODUCTION OF PIG IRON IN PENNSYLVANIA AND OHIO.

Districts	Blast Furnaces			Production—Gross tons. (Includes spiegeleisen, ferro-manganese, ferro-silicon, ferro-titanium, etc.)		
	Dec. 31, 1911.			First half of 1911.		
	In.	Out.	Total.	First half of 1911.	Second half of 1911.	Total for 1911.
Lehigh Valley	13	10	23	423,788	463,225	887,013
Schuylkill	7	9	16	375,973	346,292	722,265
L. Susq.	7	6	13	225,170	221,501	446,671
Juniata	1	2	3	51,518	42,106	93,624
Allegheny Co.	33	35	68	2,488,508	2,627,686	5,116,194
Shenango Valley	9	12	21	637,625	614,728	1,252,353
Misc. bitum.	8	14	22	618,298	666,981	1,285,279
Charcoal	3	3	6	1,952	1,561	3,513
Mahoning Val.	16	19	35	1,134,795	1,258,780	2,393,575
Hocking	0	0	1	827,976	749,342	1,577,318
Lake Counties	9	10	17	594,005	462,187	1,056,192
Misc. bitum.	6	8	14	182,741	98,582	281,323
H. R. bitum.	3	6	9			
H. R. charcoal	1	1	2	625	1,277	1,902

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

New York	240,641	209,200	449,841
Pennsylvania	1,741,542	1,719,723	3,461,265
Maryland	130,901	124,285	255,186
Virginia, West Va., Kentucky, and Tenn.	173,284	197,302	370,486
Ohio	1,707,778	1,575,796	3,283,574
Illinois, Colorado, and California	710,078	878,477	1,588,555
Total	4,704,424	4,704,683	9,409,107

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON IN PENNSYLVANIA AND OHIO BY DISTRICTS.

Lehigh Valley	91,720	82,267	173,987
Schuylkill Valley	44,932	42,373	87,305
Lower Susquehanna Valley	1,070,758	1,007,999	2,078,757
Allegheny County	534,132	587,084	1,121,216
Shenango Valley	803,726	836,862	1,640,588
Miscellaneous bituminous	478,229	383,592	861,821
Mahoning Valley	426,023	355,342	781,365
Lake Counties			
Hanging Rock bituminous			
Miscellaneous bituminous			

PRODUCTION OF BASIC PIG IRON, NOT INCLUDING CHARCOAL IRON.

New York and New Jersey	158,293	163,472	321,765
Pennsylvania—Allegheny County	1,335,712	1,548,215	2,883,927
Other counties	1,128,377	1,156,467	2,284,844
Virginia	178,012	267,380	445,392
Alabama	518,544	593,197	1,111,741
Ohio	481,666	742,564	1,224,254
Indiana and Illinois	134,859	112,747	247,606
Michigan, Missouri, and Colorado			
Total	3,935,487	4,584,542	8,520,029

PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

Pennsylvania	66,577	80,234	146,811
Illinois	11,018	26,888	37,906
Total	77,595	107,122	184,717

PRODUCTION OF ALL KINDS OF PIG IRON FROM 1907 TO 1911.

States—Gross tons.	Production—(Includes spiegeleisen, ferro-manganese, etc.)				
	1907.	1908.	1909.	1910.	1911.
Massachusetts	19,119	13,794	18,388	16,582	9,649
Connecticut					
New York	1,659,752	1,019,495	1,733,675	1,938,407	1,562,756
New Jersey	373,189	225,372	294,474	264,781	40,663
Pennsylvania	11,345,549	6,987,191	10,918,824	11,272,323	9,806,834
Maryland	411,833	183,502	286,586	326,214	255,816
Virginia	478,771	320,458	391,134	444,976	293,642
Georgia	55,825	24,345	26,072	14,725	1,200
Texas					
Alabama	1,686,674	1,397,014	1,763,617	1,939,147	1,712,443
West Virginia	291,066	65,551	228,282	174,661	291,472
Kentucky	127,946	45,096	86,371	100,509	95,202
Tennessee	393,106	290,826	332,845	397,569	324,648
Ohio	5,230,687	2,861,325	5,551,545	5,752,112	5,310,310
Illinois	2,457,768	1,691,944	2,467,156	2,675,646	2,108,002
Indiana	436,507	348,096	964,289	1,250,103	1,163,932
Michigan					
Wisconsin	322,083	148,938	348,177	307,200	276,807
Minnesota					
Missouri					
Colorado	468,486	313,071	382,766	428,612	395,968
Washington					
California					
Total	25,781,361	15,936,018	25,795,471	27,303,567	23,649,344

LOW PRICES CAUSE DECREASE IN EARNINGS OF U. S. STEEL

THE FOURTH QUARTER REPORT SHOWS FALLING OFF OF OVER SIX MILLIONS FROM THIRD QUARTER—FULLY UP TO EARLY ESTIMATES — NO CONSTRUCTION APPROPRIATIONS DURING YEAR.

THE quarterly report of the United States Steel Corporation for the fourth quarter, 1911, made public last Tuesday, shows total net earnings of \$23,105,115, after deducting all expenses incident to operation, including those for ordinary repairs and maintenance of plants, and interest on bonds and fixed charges of subsidiary companies.

The report for the quarter caused surprise in some quarters, where it was variously estimated that the earnings would not be more than \$22,000,000, and in one or two instances even as low as \$19,000,000 was talked of. The estimate made recently in steel circles was \$23,000,000. Depreciation charges were reduced 50 per cent from the preceding quarter. Wall Street in general was of the opinion that the common dividend of the company would not be earned and in consequence was agreeably surprised.

The showing of the last quarter of the Corporation's year of \$23,105,115, it is expected, will be the worst for some quarters to come. Prices during that period for steel products were the lowest in years; and, while orders taken during the last three months of the year were very satisfactory in volume, yet the business shipped was not productive of as much profit as a smaller volume during normal times on account of the low quotations. The heavy cutting down of depreciation charges for the last quarter naturally cannot be kept up, and it is not likely that this will be necessary with increased business and profits.

After common dividends were paid for the fourth quarter a surplus of about \$89,600 was shown, which, although not large, is better than expected, a deficit charged to this account for the quarter had been predicted. The above surplus with the other three quarters, gives a total surplus for the year of \$4,735,462.

Corporation's Ingot Output.

In connection with the report it is stated that the 1911 production of steel ingots by the Steel Corporation fell off about 10 per cent from the previous year. Last year the output was placed at 12,770,000 tons, as compared with 14-

170,000 tons in 1910. The Steel Corporation has a capacity for producing 18,500,000 tons of ingots a year, so that the 1911 output was but 70 per cent of capacity, as compared with 80 per cent in 1910. The Corporation also produced 10,750,000 tons of pig iron last year, compared with the record production in 1910 of 11,831,398 tons. Last year's pig iron production by the Steel Corporation was about 46 per cent of the country's output, as compared with 44 per cent in 1910.

Earnings Compared.

The quarterly statement made public last Tuesday compares as follows with the corresponding quarter in 1910:

	1911.	1910.
*Net earnings.....	\$23,105,115	\$25,990,978
†Sinking fund, etc.	3,126,594	5,612,284
Balance	19,978,521	20,378,694
Int. and sinking fd.		
U. S. S. bonds..	7,311,963	7,311,963
Balance	12,666,558	13,066,732
Preferred dividends	6,304,919	6,304,919
Balance	6,361,639	6,761,813
Common dividends	6,353,781	6,353,781
Surplus	7,858	408,032
Adjusted credits...	81,780	
Building appro....		6,000,000
Surplus	89,638	\$5,591,968

*After deducting expenses for renewals, repairs, maintenance of plants, interest on bonds and fixed charges of subsidiary companies.

†Sinking fund subsidiary companies, depreciation and reserve funds.

‡Deficit.

No appropriation for new construction was made during 1911. During 1910 \$26,000,000 was appropriated from earnings for new construction, and during the last half of 1909, \$15,000,000 was set aside,

making a total of \$41,000,000 appropriated from earnings for new construction since 1907. The banner year for earnings for the Corporation continues to be 1907, with a total of \$161,000,000; the year 1906 standing second with \$156,600,000, and 1910 third with \$141,000,000.

The net earnings of previous quarters compare as follows:

QUARTER ENDED	TOTAL NET EARNINGS
September 30, 1911.....	\$29,522,725
June 30, 1911.....	28,108,520
March 31, 1911.....	23,519,203
December 31, 1910.....	25,990,978
December 31, 1909.....	40,892,746
December 31, 1908.....	26,225,485

Year's Earnings Compared.

Combining the reports for the four quarters, the following statement for the year 1911 is compiled, which is approximately accurate, as compared with the figures for 1910:

	1911.	1910.
Net earnings.....	\$104,255,563	\$141,054,755
*Sinking fund.....	19,719,228	24,316,597
Balance	84,536,335	116,738,158
Int. and sink. fund		
U. S. S. bonds..	29,247,850	29,247,850
Balance	55,288,484	87,490,308
Preferred divids..	25,219,677	25,219,677
Balance	30,068,807	62,270,631
Common divids..	25,415,125	25,415,125
Balance	4,653,682	36,855,506
Adjust. credits...	81,780	183,123
Building appro....		26,000,000
Surplus	4,735,462	10,772,383

*Sinking fund subsidiary companies, depreciation and reserve funds.

†Equal to 5.91 per cent on \$508,302,500 common stock outstanding, as compared with 12.25 per cent earned on same stock previous year.

‡Deficit.

PIG IRON PRODUCTION FOR 1911 UNDER 24,000,000 TONS

[See Detailed Tables on Opposite Page.]

THE report of the American Iron and Steel Association on pig iron production for 1911, was issued February 1, in the Association's monthly Bulletin. The report is complete, Editor James M. Swank announcing that every furnace has been heard from.

The report shows that the total production of all kinds of pig iron in 1911 was 23,649,344 gross tons, against 27,303,567 tons in 1910, a decrease of 3,654,223 tons, table gives the half-yearly production in tons since 1908:

YEAR.	FIRST HALF	SECOND HALF	TOTAL
1908	6,918,004	9,018,014	15,936,018
1909	11,022,346	14,773,125	25,795,471
1910	14,978,738	12,324,829	27,303,567
1911	11,666,996	11,982,348	23,649,344

Classified Production.

Summarizing the year's output figures,

Editor Swank says in his report:

"The production of Bessemer and low-phosphorus pig iron in 1911 was 9,409,107 tons, against 11,245,642 tons in 1910, a decrease of 1,836,535 tons, or over 16.3 per cent. In the second half of 1911 the production was 4,704,683 tons, as compared with 4,704,424 tons in the first half. The production of low-phosphorus pig iron alone in 1911 amounted to 282,460 tons, against 259,077 tons in 1910.

Decrease in Basic Pig Iron.

"The production of basic pig iron in 1911, not including charcoal of basic quality, was 8,520,029 tons, against 9,084,608 tons in 1910, a decrease of 564,579 tons, or over 6.2 per cent. In the second half of 1911 the production amounted to 4,584,542 tons, against 3,935,487 tons in the first half, an increase

of 649,055 tons. The production in 1910 was the largest in our history; the year of next largest production was 1911."

Furnaces in Blast.

The whole number of furnaces in blast on December 31, 1911, was 231, against 212 on June 30, 1911, and 206 on December 31, 1910. The number of furnaces idle on December 31, 1911, includ-

ing furnaces being rebuilt, was 235, against 261 on June 30, 1911, and 268 on December 31, 1910.

During the last six months of 1911 the number of furnaces actually in blast during a part or the whole of the period was 275, against 297 in the first half of the year. In the last half of 1910 332 were active, against 374 in the first half.

STATE STATISTICS ON IRON AND STEEL INDUSTRY IN PENNSYLVANIA IN 1910.

CHIEF J. L. ROCKEY, of the Bureau of Industrial Statistics of the State of Pennsylvania, gives figures by counties on the Pennsylvania output of iron and steel for 1910, in the annual report of the bureau, just published. The report is chiefly valuable to the iron and steel industry for its subdivision of the State's output totals into county totals, and for its data on industrial accidents and general industrial conditions.

The report gives these figures on pig iron output for 1910, for the State as a whole:

Production, 1910, gross tons.....	11,128,958
Capital invested	\$231,199,388
Market (realized) value of output	179,629,535
Value basic materials—cinders, scrap, etc.	99,929,092
Average cost per ton	8.98
Realized value, ton	16.15
Salaries paid	1,532,423
Wages (workmen)	10,496,499
Average yearly earnings	625.61
Average daily wage	2.09
Labor cost per ton.....	.95
Tonnage per man per day.....	2½ tons
ACCIDENTS—	
Fatal	42
Non-fatal	3,971

EMPLOYEES—	
Americans	5,557
Foreigners	9,068
Negroes	409
	15,034

Outputs by Counties.

The State report gives these figures on outputs by counties:

COUNTIES—	GROSS TONS		
	Pig Iron	STEEL	& STEEL
Allegheny	5,330,986	6,945,860	7,145,838
Mercer	834,042	547,362	590,129
Cambria	806,865	1,068,433	816,106
Lawrence	557,376	658,796	660,395
Beaver	500,180	32,473	15,512
Montgomery	415,488	414,268	527,973
Northampton	394,685	480,577	320,974
Dauphin	372,477	648,570	553,704
Washington	324,985	463,882	680,836
Lebanon	298,165		102,187
Lehigh	277,395		123,518
Chester	83,536	657,243	502,728
Schuylkill		153,542	125,993
Philadelphia		137,469	134,137
Erie	76,382	16,581	20,593
Fayette	68,758		23,387

COUNTIES—	ROLLED IRON		
	Pig Iron	STEEL	& STEEL
Westmoreland	12,537	87,764	
Armstrong	20,032	71,433	
Indiana	163,161	89,42	

Finished Material Output.

The report gives the total output of agricultural implements for the State, for 1910, at \$3,822,194; of asbestos products, \$4,337,354; of aluminum, \$6,841,792; of automobiles, \$5,118,764; axles and springs, \$4,982,472; axes and edge tools, \$1,890,730; boilers, tanks and vats (41 establishments reporting), \$10,330,556 bolts, nuts and rivets (16 establishments), \$5,866,058; cars and car-wheels (20 establishments), \$75,177,349, on an investment of \$30,486,000; castings (84 establishments), \$12,869,839; bridges of iron and steel, \$21,629,383; machinery (137 establishments), \$35,940,371; and engines and boilers, \$17,969,074.

Pipes and tubing (25 establishments) are credited with a total output of \$22,356,370, and machine tools with \$12,359,000. Steam and electric locomotives are consolidated, and the grand total of output (11 establishments), is given at \$49,633,229, on an aggregate capitalization of \$28,999,765.

Steel Output Costs.

The report summarizes the steel trade's cost figures as follows—figures being for production of steel ingots and castings and all rolled material for the State as a whole, year 1910 (the 33 mills that make no rolled or finished product being omitted from this computation). Black plate output is also excluded from these production figures:

Output, gross tons.....	13,761,484
Capital invested	\$405,512,349
Value output (exclusive black plate)	494,032,501
Salaries	8,587,193
Wages (workmen).....	89,446,174
Wage earners	132,090
Average yearly earnings.....\$	675.87
Value product per employee.....	3,740.03
Average value per ton.....	37.03
Labor cost per ton.....	6.69

Tin Plate Industry.

The summary for the tin plate indus-

try is as follows in quantity and value of this year's output:

Plants in operation.....	20
Capital invested	\$12,738,206
Black plate.....	POUNDS
Untinned	938,850,302
Tin plate.....	39,563,357
Terne	886,550,310
All other	64,025,122
Average value per 100 pounds.....	1,801,850
Tin plate	37,865
Terne	3.50
Average value per ton—	4.40
Block plate, untinned.....	51.14
Average value per employee.....	3,364.62
Salaries paid	509,006.00
Wages (workmen)	8,144,320.00
Average yearly earnings.....	701.38
Wage earners employed.....	10,701

The tin plate comparisons, 1910 with 1909, show the increase in Allegheny county's proportion of output during the two years. The figures by counties are:

COUNTIES	1909—LBS.	1910—LBS.
Lawrence	181,130,813	252,334,100
Westmoreland	226,145,653	239,098,485
Allegheny	119,183,912	211,744,493
Mercer	91,330,965	119,465,897
Washington	70,117,783	84,151,758
Indiana	26,830,900	29,705,510
Greene		11,079,396
Dauphin		2,995,889

PLANS FOR TOOL PLANT.

Cincinnati Concern Prepares for Enlargement.

At the annual meeting of the stockholders of the American Tool Works Company, at Cincinnati last week, the question of a new plant for the company was discussed, and definite action can be expected some time during the year. The company some years ago bought 12 acres for a new plant site, but has been waiting for better housing conditions in the plant where it desired to locate.

The company's present plant is inadequate. The plans already accepted provide for steel and concrete buildings to cost \$300,000. The improvement will be made out of surplus, without bonding or issuance of new stock.

Franklin Alter was re-elected president; J. B. Doan, vice president and general manager; Robert S. Alter, secretary; Henry Luers, treasurer; Luther Kirkpatrick and Louis Voorheis, additional directors.

Storage Battery Cars at Chicago?

In connection with the proposed electrification of the Chicago terminal of the Illinois Central officials of that road had a conference with Thomas A. Edison, according to eastern financial authorities. One of the most serious objections to electrification is the possible danger of the use of a third rail or trolley. On this account Illinois Central officials have decided to test several storage battery cars. Three are being built for these tests.

E. C. & M. MOTOR FIELD RHEOSTATS.

PERSONAL

THE Electric Controller & Manufacturing Company, Cleveland, recently placed on the market a new line of motor field rheostats for varying the speed of adjustable speed, shunt and compound direct current motors. The manufacturers claim the following features of design to be of important value: The construction is fire-proof throughout; the face carrying the arms, and contact is of the best quality monson slate with beveled edges and oil finish, the resistance units consist of small cast iron grids insulated with asbestos and wound with resistance wire, these units being carried by the slate and fastened directly to the contacts; the resistance wire has an unusually low temperature coefficient, so that the resistance of the rheostat—for any one setting—does not increase with heating and thereby alter the speed of the motor which it regulates; an ornamental dial plate carrying the words, "fast," and "slow," indicates at a glance which way to turn the rheostat handle to obtain the desired change in motor speed. By removing the four corner bolts, also, the slate carrying the resistance, contacts and arm can be readily removed from the case. Any one resistance unit may be removed and replaced without disturbing adjacent ones.

A valuable adjunct to these rheostats, is what has been designated the field rheostat relay. It is well known that a shunt or compound wound motor should be started from rest with full field strength and in fact, if the shunt field is weakened to a large extent, it may be impossible to accelerate the motor, because of insufficient torque, prohibitive sparking at the commutator, or such a large volume of current that fuses and circuit breakers would be blown. It has, therefore, become the preferred practice to return the rheostat handle to position of full field strength, every time the motor is started.

The field rheostat relay has been developed to prevent starting the motor with a weakened field.

The Field Rheostat Relay.

This relay consists of a magnet coil, or solenoid through which passes a steel plunger carrying at its lower end a contact plate, for electrically connecting two contact studs. The magnet coil and the plunger are enclosed in an iron case, which serves not only for protection, but acts as a part of the magnetic circuit.

The relay coil is connected in series with the armature circuit of the motor, and the two contact studs are connected to the terminals of the motor field rheostat so that the rheostatic resistance is

short-circuited when the contact studs are bridged by the contact plate.

The relay coil is so designed that, when the armature current exceeds a predetermined maximum, the plunger is drawn up, causing the contact plate to connect the two contact studs, thus cutting out all of the resistance in series with the shunt field. This gives the motor its full field strength and consequently maximum torque, enabling it to properly accelerate its load. As the current decreases, due to the speeding up of the motor, the relay plunger drops, inserting the rheostat resistance in the shunt field circuit and weakening the field. This cycle of operation is repeated until the motor has been safely brought to the proper speed as determined by the setting of the motor field rheostat.

The E. C. & M. field rheostat relay is claimed to make the starting of adjustable speed, shunt and compound-wound motors absolutely safe, no matter what

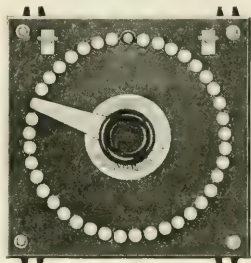


Fig. 1—Motor field rheostat.

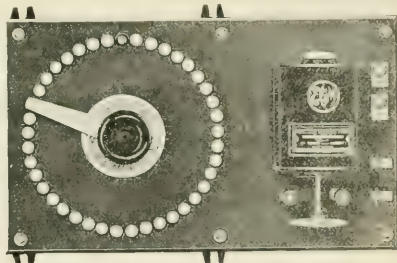


Fig. 2—Motor field rheostat with relay

the setting of the motor field rheostat may be. It permits of setting the field rheostat to give the most efficient motor speed for the work in hand and no matter how often the motor is started and stopped, it will invariably run at this efficient speed. The claim is made that it saves the time of the operator, who no longer has to adjust his motor field rheostat after the motor is safely started.

When this relay is used in connection with the E. C. & M. automatic motor starter or controller, the motor cannot be injured during acceleration.

The E. C. & M. motor field rheostat is furnished either with or without field rheostat relay. It is rated up to and including 50 horsepower, at 110, 220 and 550 volts, and in general will provide for a maximum speed variation of 4 to 1.

Virginian Railway has arranged \$29,000,000 stock issue to be used in completing extension plans of the late H. H. Rogers.

A. J. Leischman of Corry, Pa., last week succeeded William Sodemann, of St. Louis, as manager of the Edwardsville (Ill.) plant of the United States Radiator Corporation. The change is due to the closing of several of the company's plants. Manager Leischman will take his office force to Edwardsville. The Edwardsville force has been transferred to the factory at Detroit, Mich. Mr. Sodemann, the retiring manager, takes a position with a St. Louis light and heat concern.

V V

Charles Fitzgerald has been appointed general sales manager of the Pittsburgh Valve, Foundry & Construction Company, Pittsburgh. Mr. Fitzgerald was in charge of the installation of the high-pressure water system in Baltimore, for the company.

V V

B. A. Brennan, recently contract manager of the Westinghouse Machine Com-

pany, has been appointed sales manager of the power department of the Bethlehem Steel Company, in charge of gas engine and pumping engine sales. His headquarters will be at Bethlehem.

V V

Department heads of the Riter-Conley Manufacturing Company, were the guests of the company at the annual company dinner, at the Duquesne Club, Pittsburgh, the evening of January 27. The table was laid as a reproduction of a structural steel beam, in a mass of flowers, while across the top of the menu card was pictured another steel beam supported by a brawny steel worker. As it was an entirely informal affair, no set addresses were made, though several of the diners made after-dinner speeches. Eugene V. Messler, until recently affiliated with the Jones & Laughlin Steel Company, who became identified with the Riter-Conley interests the first of the year, was one of the guests. Those present were:

F. M. Bowman, A. H. Bovard, J. Grier

Campbell, H. A. Carpenter, H. B. Clarke, Charles E. Coy, John J. Crowley, W. H. Dickinson, J. T. Donaldson, J. Gilmore Fletcher, Cyrus S. Gray, John L. Hafner, R. L. Hibbard, J. A. Hutchinson, W. L. Jack, I. D. Johnston, J. McLean Martin, R. P. McDonald, E. L. Messler, R. F. McCloskey, C. C. Mourer, J. I. Mulvey, Walter Nuttall, W. B. Osborne, Wayne Rawley, Thomas Rodman, Joseph Riter, H. S. Sanford, George R. Stewart, M. E. Studer, W. P. Thornton, Lewis Vincent, J. F. Wulfetange, F. B. Zopf.

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T. Coleman Ward, Pittsburgh manager for Hickman, Williams & Company, has left for a brief visit to Panama.

REVIEWS

"EFFICIENCY" IN ITS THIRD EDITION.—The third edition of Harrington Emerson's much quoted and largely discussed work of "Efficiency"—which was the first of the Emerson works on that subject, first published in 1909—has made its appearance from the press of the "Engineering Magazine," New York. The original work is revised to some extent, and certain sections considerably amplified by the author, in this third edition. In a foreword by Charles Buxton Going, it is explained: "In this revision there is no change of fundamentals, but only an amplification of statement to meet the changed position of public intelligence, and an establishment of connecting thought by which the reader may pass the more readily to the study of Emerson's second book, shortly to appear, on 'The Twelve Principles of Efficiency.'"

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MARINE ENGINES.—The Ferro Machine & Foundry Company, Cleveland, O., has issued an elaborately illustrated booklet on "Marine Engines and Equipment," which contains a practical treatise on correct design and construction for boatman and boatbuilder alike. The earlier sections of the publication are devoted to the elementaries in gas engine principles and construction, with brief notes on the history of the internal combustion engine. From primer and text-book, this unusual publication progresses by stages into a complete catalogue and price list. Seldom is so ambitious a plan so successfully carried out. The illustrations and text are excellent examples of the printing art.

HAMILTON, O.—Sterling Paper Company announced that it would at once treble the capacity of present works on North Second street by expending \$175,000 for new buildings. Work will commence in February on a five-story stock-house, a one-story machine room and a one-story finishing room.

RECENT PATENTS

The following patents, granted to January 23, are reported expressly for the INDUSTRIAL WORLD, by Siggers & Siggers, patent attorneys, Suite No. 30, National Union building, Washington, D. C.:

1,015,264.—William D. Forsyth, Youngstown, O., improvements in process for making expanded metal; assigned one-half interest to Alexander M. Neeper, Pittsburgh. The invention relates to expanded metal adapted to be used in construction of buildings, roofs, walls and partitions, and for reinforced concrete construction. Process consists in slitting a sheet of metal with series of longitudinal parallel slits, outside lines of slits being coincident with the edges of the connected longitudinal members; other series of longitudinal parallel slits of substantially the same length, parallel to, intermediate and between said first-mentioned series—medial points in the last mentioned series being substantially equidistant from the medial points of the adjacent slits of the first-mentioned series. The sheets are then transversely cut, and finally stretched laterally, so as to form meshed members.

1,014,747.—Frank Beemer, Philadelphia, improvements in ball-grinding machine, assigned to Standard Roller Bearing Company, Philadelphia, a corporation of New Jersey. This invention has for its object to compel each ball of a series of balls, filling the grooves of rotating bodies, to traverse each of the grooves successively and continuously, thus hastening the operation and at the same time producing balls which are mathematically spherical, are of almost mathematically the same size and present a smooth and perfect surface. The device consists of the combination with a pair of relatively rotating bodies finished with a series of concentric grooves on their meeting faces, and adapted to operate upon balls carried around between them, of a series of independent tubular channels, their ends in communication with different grooves of the series, whereby each of the balls is compelled to progressively change from one groove to another as the balls are carried around again and again.

1,015,117.—Henry P. Arnold and Adam P. Witteman, Philadelphia, have invented improvements in crank-shaft lathe, Arnold having assigned his interest to Witteman. The invention consists of an improved lathe for turning crank-shafts or similar eccentric machine elements and further consists of an improved head for such a machine in which crankpins may be centered to be turned re-

gardless of the angles at which the cranks project in relation to each other.

1,015,473.—Latham H. Brightman, Lakewood, Ohio, improvements in machine for straightening metal bars. This invention has for its object to provide a machine especially adapted for straightening metal bars of angular cross-section, which will remove both the longitudinal curvature and also any twist that there may be in the bar. There are, in combination, a bed, a flier frame revolvably mounted, dies rotatably supported in the flier frame and means for holding the dies against rotation on their own axes while the flier frame is being revolved.

1,015,429.—William H. Fahrney, Chicago, improvements in sheet-metal-bending machine. The inventor claims a novel and simple construction of machine which adapts it for bending sheet-metal into curved shape of any desired radius. There is a combination of a standard, bars extending in parallel spaced relation from the standard, vertical shafts containing toothed wheels, pivotal members supported on the bars, also with toothed wheels journaled on them, to cooperate in crimping the flanges of channel-form sheet-metal fed between the teeth of the opposing wheels and thereby curve the work.

1,015,324.—Lou B. Kauffmann, New York, improvements in metal-shaping machine, assigned to Kauffmann Kase Company, New York City, a corporation of New York. The invention relates more particularly to machines for shaping metal strips into angles and frames. There is provided means for positioning a strip of metal bent longitudinally into two parts at substantially right angles to each other; a reciprocable die block, which is hollowed from the longitudinal bend between the parts with increasing depth outwardly; a reciprocable former for bending the part into the hollow of the die block, and a pair of reciprocable blocks at either side of the die block for closing the bend upon itself.

The following patents granted to January 23, are reported expressly for the INDUSTRIAL WORLD by J. M. Nesbit, patent attorney, Park building, Pittsburgh, from whom printed copies may be procured for 15 cents each:

Apparatus for breaking in shoes, C. F. Byrnes, Sewickley, Pa.; gas producer, W. B. Chapman, New York; spring motor, H. W. Cleland, Wilkensburg, Pa.; valve gear, J. H. Gentry, Greentown, Ind.; turbine blading, J. S. Green, Pittsburgh, assignor to the Colonial Trust Company, same place; transfer mechanism for hotbeds, James Simpson, Mc-

Keesport, Pa., assignor to National Tube Company, Pittsburgh; mine car wheel, J. S. Skelly, Monongahela, Pa.; car wheel mold, and method of making car wheels, F. K. Vial, Chacago, assignor to Griffin Wheel Company; apparatus for the manufacture of axles, Curt Werckmeister, Hazelwood, Pa.; apparatus for regulating turbines driven by live and exhaust system, Otto Banner, Sterhrade, Germany; fly wheel, W. L. Clouse, Tiffin, O., assignor to National Machinery Company, same place; electric welding machine, J. A. Heaney, Flint, Mich.; apparatus for charging glass molds, also manufacture of glass (2) C. E. Blue, Wheeling, W. Va.; process for hardening steel castings, J. W. Gebhard, Muncie, Ind., assignor to Armor Steel & Foundry Company; grinding machine, A. B. Landis, Waynesboro, Pa.; coke oven door, Raffaello Lucia, Uniontown, Pa.; guide rest bar for rolling mills, Jenkin Williams, Pittsburgh.

THE DEATH RECORD

E. H. Matthews, Long Plant Superintendent for Jones & Laughlin.

Edwin H. Matthews died January 27 at his home in Pittsburgh, after a brief illness of pneumonia. He was born in England and came to this country in 1870. He located on the Southside and soon became connected with the Jones & Laughlin Company. He filled several minor positions with that firm until he became general superintendent of the plant. He held that position for many years before he retired some time ago.

E. A. Downey, of National Tube Selling Force.

Edward A. Downey, St. Louis sales manager of the National Tube Company, died very suddenly in that city January 26, while being driven in a taxicab to a hospital from a Pennsylvania train, having been taken suddenly ill while en route home. He was 55 years old and had been connected with the tube company 27 years. Death is believed to have been due to heart disease. Mr. Downey was recognized as one of the most expert steel men in the West.

SMOKE PREVENTION.

ST. LOUIS CAMPAIGN.—An effort to make the Rock Island locomotives stop smoking as they run through Parkview, is to be made by the St. Louis Smoke Abatement organization. Breckenridge Jones, president of the Mississippi Valley Trust Company, was one of 13 St. Louisans against whom warrants charging violation of the anti-smoke ordinances were issued last week.

TRADE MEETINGS

Pittsburgh Foundrymen's Association.

The regular monthly meeting of the Pittsburgh Foundrymen's Association will be held at Engineers' Hall, Oliver building this (Monday) evening at 8 o'clock. William H. Wood, foreman of the brass shop, Pennsylvania Lines West, Northside, Pittsburgh, will read a paper on "Brass." The Associated Foundry Foremen have been invited to meet with the foundrymen on this occasion.

Mechanical Section, Engineers' Society of Western Pennsylvania.

The annual meeting of the Mechanical Section of the Engineers' Society of Western Pennsylvania will be held in the society rooms, Oliver building, Pittsburgh, Tuesday evening, February 6. Chairman A. L. Hoerr will be the speaker of the evening. He will discuss "Notes on Development of Engineering Supervision in Industrial Plants." Mr. Hoerr is engineer for the National Tube Company, and will present an interesting paper. Reports covering the work of the section during the year and the election of officers for the ensuing year will be features of the meeting.

Manufacturers and Contractors' Club.

At the meeting of the Manufacturers and Contractors' Club in the Lewis building, Pittsburgh, January 29, reports of the annual banquet held recently showed that it had been the means of largely increasing the membership and a number of applications were presented. A committee was appointed to solicit new members.

Reports were presented to the effect that bids will be asked for during the week for the erection of the Frick & Lindsay six-story building, Northside; that Rutan & Russell are preparing plans for a six-story building, that plans are being prepared for a hotel, a theatre and two manufacturing plants, to be located in Pittsburgh.

Electrical Boosters' Club.

Announcement has been issued for the regular meeting of the Pittsburgh Electrical Boosters' Club, in the White Room, Nixon cafe, Pittsburgh, February 5. Dinner will be served at 6:30 p. m. Interesting talks will be given on electrical equipment and installations.

Ohio Engineering Society.

The Ohio Engineering Society, at its annual meeting at Cleveland, O., last week elected the following officers: President, John Laylin, Norwalk; vice president, L. A. Fauver, Lorain; secre-

tary and treasurer, C. J. Knisely, New Philadelphia, re-elected; trustees, T. L. Gibson, Elyria; C. L. Bushey, Shelby; C. J. Peters, Tiffin; A. F. Cole, Marietta; M. P. Lauer, Cleveland.

Ohio Builders' Supply Association.

The Ohio Builders' Supply Association in session at Dayton, O., last week, elected officers as follows: Howard Arnold, Dayton, president; W. O. Holst, Toledo, first vice president; J. M. Van Wagner, Toledo, second vice president; J. W. Smith, Portsmouth, third vice president; E. E. Stillwell, Bellefontaine, fourth vice president; John Q. Adams, Coshocton, fifth vice president; D. K. Thompson, Columbus; Frank Childs, New Lexington, and Walter McCammon, Cincinnati, directors.

INDUSTRIAL FIRES.

SYRACUSE, N. Y.—Entire plant of Globe Malleable Iron & Steel Company, destroyed January 23; loss \$60,000.

HUNTINGTON, W. VA.—Huntington Stove Foundry Company's plant destroyed January 23; stock and patterns total loss; estimated at \$20,000. Will rebuild.

WASHINGTON, PA.—Lancaster Brothers, foundry destroyed January 26. Loss \$50,000.

ANDERSON, IND.—Anderson Tool Company's plant destroyed, with exception of a small foundry building, January 26. Loss \$100,000; fully insured.

BUTLER, PA.—Blacksmith shop, pipe shop and machine shop of Standard Plate Glass Company, destroyed January 28; loss \$40,000. Machine and blacksmith shops completely wrecked. Will rebuild.

CINCINNATI, O.—Warehouse of Consolidated Coal & Mining Company, Erlanger, O., burned January 30. Loss \$4,500; insured for \$2,000. Will rebuild.

SHARON, PA.—Millwright building of Driggs-Seabury Ordnance Corporation works, here, destroyed January 30; loss \$4,000, insured.

Complain on Freight Rate.

John D. Bogar & Sons, of Herndon, Pa., complained to the Pennsylvania State Railroad commission that the freight charges on a consignment of mine ties from that point to Shamokin is at the rate of 12 cents per tie, or half of the price obtainable per each tie. An overcharge of about \$32, it is claimed, has been made.

ELECTRIC HEATING IN SWEDEN.

[U. S. Consul Stuart J. Fuller, Gothenburg, in Daily Consular and Trade Reports.]

INTEREST has been aroused in Sweden by the announcement that the municipal electric plant of Gothenburg regards most favorably the outcome of the experiments in electric heating conducted by them on a small scale in the winter of 1910-11, and is preparing to make investigations of a more elaborate nature this year.

The problem of heating at a reasonable cost is a growing one in southern Sweden, and the hope is expressed that it may be solved by utilizing the surplus water power to furnish electrical heat. It is planned to try the scheme in actual practice by equipping two or three of the 5-story apartment houses found throughout the city and testing various devices in actual use.

The coal in ordinary household use costs the consumer about \$5.22 per ton of 2,240 pounds, delivered, and firewood, sawed and split, delivered and piled in the wood cellar, costs, roughly, \$9.85 per cord of 128 cubic feet. Wood is the fuel most generally used for heating, despite its high cost. Only a few of the newest buildings are equipped with steam or other central heating systems, although most of the city's population of 168,000 live in large apartment houses and tenements. In all these buildings large tile stoves have been built into almost every room. These are designed to burn wood. The heat that these tile stoves give off is pleasant and the economy of fuel consumption is surprising. They require a minimum of care and attention. A wood fire is started in the morning and allowed to burn down to coals, whereupon all the dampers are tightly closed, confining the heated air and gases to the long winding flues that fill the interior of the stove and bringing the whole to a temperature such that it radiates no small amount of heat. The radiating surface is large, as the stoves usually extended from floor to ceiling. The heat from a single firing is retained for 12 to 15 hours. The wood is almost entirely consumed.

Electric Heaters.

It is proposed to take advantage of the heat-retaining properties of these porcelain stoves and their uniform pleasant heating effect by means of portable electric-heating elements of a new construction that may be inserted in the ordinary combustion chamber and will produce during the night sufficient heat to last throughout the following day.

This would make possible the utilization of the large number of stoves already installed and representing no small amount of invested capital and would also supply a demand for the city's surplus current available through the night. This energy is stated to cost the city only one-half ore (\$.00134) per kilowatt-hour, plus some minor transforming charges and other expenses.

It is suggested that the current for heating could best be supplied through a special set of mains, and that heating current could be turned off at the power station at a fixed time in the morning. Should additional heat be desired during the day, the portable electric heater could be removed and the usual wood fire built, for these stoves have no grates and the fire is built in a plain, rectangular fire-brick chamber.

Municipal Electric Power Plant.

The local electric power station is a municipal affair, securing part of its power from the waterfall at Trollhattan, about 50 miles away, and generating the balance in Gothenburg in a steam-operated plant.

Both alternating and direct current are furnished, the rates per kilowatt-hour being now as follows: For lighting, \$0.0938; for elevators, \$0.067; for motors and power, \$0.0482.

The total amount of electric power brought to and produced in Gothenburg for the year 1910 by the public-service plants aggregated 16,211,593 kilowatt-hours, of which 12,023,839 came from Trollhattan and the balance was generated in the steam plant. The aggregate loss of energy amounted to 2,424,714 kilowatt-hours, or 14.95 per cent. The principal uses to which the net power was put are as follows: Greater industries, 5,185,928 kilowatt-hours; street-car lines 4,165,277; harbor cranes and derricks, 53,678; Trollhattan power station, 18,630; private lighting, 2,409,002; private motors, 1,453,566; public lighting, 163,615. An extension of the service took place in 1910, there having been an increase of 20.6 per cent in the number of motors connected and of 30 per cent in the number of purchasers of current. The plant's operating ratio was 42 per cent.

Electric heating is not new in Sweden and satisfactory apparatus has been on the market for some time, but both first cost and current consumption have hitherto been too great to bring about anything like extensive use. Well-informed critics here estimate that electric heating can not be made as cheap as ordinary heating until the current can be

delivered for 5 ore (\$.00134) per kilowatt-hour. This is one of the points it is hoped to clear up by the experiments to be undertaken by the municipality.

Portable Tile Stoves.

There is a portable tile stove for electric heating on the market that is claimed to be as effective as the stoves in which fuel is burned. The makers state that their usual size is about 100 by 50 by 30 centimeters (39.37 by 19.685 by 11.811 inches) and has a capacity of 1.5 kilowatts. This, they state, will raise the temperature in a room of 30 cubic meters (39.24 cubic yards) capacity to 10 degrees Celn. (18 degrees F.) in one hour. After the room has been heated, the stove may be switched to another set of connections using less current. It is claimed that the cost of operation on highest current requirement in Gothenburg is 27 ore (\$.0724) per hour, while the lower connections to which it can be switched cost 14 ore (\$.3752) and 7 ore (\$.0188), respectively.

The little town of Boras, which has about 21,000 inhabitants, is considering the sale at very low prices, by the municipal electric plant, of current for household use along similar lines. It is planned to have three tariffs—one in force during the darker part of the 24 hours, with usual charges, for lighting purposes; and a very low rate (2 to 2½ ore, equivalent to \$.0054 to \$.00694) during the night for current used to warm rooms and houses by heating up the Swedish porcelain stoves or operating electric heaters or other designs.

The tile stoves for fuel consumption are usually ornamental. Some are cylindrical and some are square or triangular. These are not portable, but are built into the houses and form a part of the permanent fixtures that go with every rented apartment. When it is considered that a nine-room apartment will often contain nine of these stoves, costing \$26.80 to \$53.60 each and over, it will be readily seen how much their utilization for electric heating would mean, particularly as the scheme proposed would not leave the householder to rely on electricity alone. The heat from the radiation of the heated porcelain is much pleasanter than steam or hot water heat, and is greatly preferred by the Swedish public.

Manufacture of Tile Stoves.

The manufacture of tile stoves is an important industry in Sweden, the value of the annual production running to \$670,000. There are about 40 plants, large and small, in the Kingdom and they employ some 900 persons.

It is proposed to spend \$1,340 in experimenting, in addition to the current consumed, and this is to cover the

testing of forms of electric heating devices other than those adapted to the tile stove as well as those to be used in that form of heater.

American manufacturers who may wish to have apparatus tried or considered will be furnished the desired address upon application to the Bureau of Manufactures. Two photographs have been forwarded by Consul Fuller and will be loaned to interested persons or firms.]

TO BUILD DIESEL ENGINES.

Ground to Be Broken Coming Week for St. Louis Plant.

Ground will be broken the coming week at Second and Utah streets, St. Louis, preparatory for the erection of the plant of the Busch-Sulzer Brothers-Diesel Engine Company. This company owns the American rights to the Diesel engine and will erect a \$500,000 plant for its manufacture. The site, an eight and one-half acre plot, was purchased by the company several weeks ago. The Diesel engine is an oil-burning machine built on the principle of internal combustion.

Adolphus Busch, the St. Louis brewer, recognized the possibilities of the engine when it was first given to the world by the German inventor, Dr. Rudolf Diesel, 14 years ago. He then purchased the American rights and as several improvements have been made since, he organized a company for its manufacture with the late patents.

The Diesel invention is a departure from all preceding internal combustion engine construction. The lowest grade crude or residual oil can be used, it is said, with results in efficiency far superior to that of most modern steam or gas engines. One of these engines, which furnished light and power for the Aips concession at the Louisiana Purchase Exposition attracted widespread attention.

The company to which the Diesel patents were transferred, carried on its operations in New York several years, but in 1909, the headquarters was moved to St. Louis, while the factories remained in the North and East. A year ago Mr. Busch associated with him the inventor and Sulzer Brothers of Winterthur, Switzerland. The resulting company is capitalized at \$2,100,000. Sulzer Brothers are said to lead all Europe in the manufacture of the Diesel engine, where about one-half million horsepower are in operation.

Rossford, O. — Sub-bids are being taken for a two- and three-story sugar plant, to be built for the Toledo Sugar Company, from plans prepared by the Larowe Construction Company, Woodward avenue, Detroit, Mich. The building will be 80x70 feet 2- and 3-story.

STEEL BARGE LINE.

Project of St. Louis Interests Explained.

St. Louis shipping interests have been notified that contracts are ready to be let by the St. Louis-Gulf Steel Barge Line for a fleet of steel barges to traverse the Mississippi and Missouri rivers. The head of the new project is W. F. Saunders, of the St. Louis Business Men's League. The preferred stock, which is nearly paid in amounts to half the total stock, which at the outset is fixed at \$400,000.

All the \$200,000 preferred stock probably will be taken in a week or so. Robert H. Whitelaw, who will be the first president of the company, has issued a statement, in which he estimated the company will be in position to handle business by May if subscriptions to the \$200,000 preferred stock are completed at once. Mr. Whitelaw's statement, which deals with many phases of the new project, is in part as follows:

The proposed St. Louis-Gulf Steel Barge Line Company now being organized is not a promotion for stock speculative purposes, but is a conscientious effort on the part of some of our most active public-spirited citizens to re-establish river transportation between St. Louis and New Orleans.

Some of these men are largely interested in railway development in the Southwest and have a conviction that the commercial interests of this city must have the advantages of river transportation to hold in full measure its supremacy.

The company will be incorporated under the laws of Missouri, stock full paid. There will be no commissions paid for sales of stock or extravagant promotion expenses. It is expected the company will be economically managed. In order that the company may meet the plans for which it is being organized it will need the co-operation and good will generally of the merchants, manufacturers and capitalists of St. Louis, and a much larger capital will be eventually required than is now contemplated.

It should not be expected that returns to stockholders will be large during the first year of operations, although it seems probable that the company will be placed on a paying basis at an early date.

The Organization Committee, I am sure, recognizes the development of river freight service will require ample capital and energy as well as time in perfecting its equipment, arranging its terminals, etc., for the economic handling of such a large volume of merchandise as will justify its existence.

St. Louis now has equitable freight rates from the grain belt of the West and Northwest: has the capital and must surely have somewhere in our midst, the personality necessary to build modernly constructed elevators, accessible to the river front, and re-establish our grain market.

Added to this are possibilities of tonnage now available, and which we believe will be increased almost beyond imagination upon the completion of the

Panama Canal, now so near at hand, through that magnificently equipped seaport, New Orleans.

Demand for River Transport.

When it became known last month that the barge E. E. Green would not return to New Orleans under the Mississippi Valley Transportation Company management, I was offered over the telephone, without solicitation, by different industries in this city more than 3,500 tons of freight for prompt shipment to New Orleans.

The company expects to be able to handle merchandise from New Orleans to Galveston and Colon, even if to do so satisfactorily it may be necessary to charter and operate an ocean steamship for the service. Under our marine laws, nothing but an American ship flying the American flag can be used for coastwise business. American bottoms cost consequently a month for charter nearly double what foreign bottoms could be secured for.

Quite a volume of tonnage has developed in the last six months between St. Louis, the Mississippi Valley and Pacific Coast points via Colon, in connection from New Orleans with the California and Atlantic steamship companies and the Panama Railway. This service, however, has temporarily, at least, been interrupted by the withdrawal of the New Orleans-Colon steamer. It is expected this service may be resumed.

It will be possible to have merchandise moving by regular lines from the Atlantic seaboard cities by way of New Orleans to St. Louis. There will undoubtedly be, upon the completion of the Panama Canal, if not before, new steamship lines established from New Orleans direct to the east coast, as well as the west coast of South America, and better and more direct connection with transportation lines to all the Latin-American countries to the south of us.

It contemplates purchasing for its first equipment, having option on same, three steel barges and one charcoal iron hull towboat. The barges, one of which has been in use about nine months and the other two of which are entirely new, are each 200 feet long by 36 beam, the capacity of each being 1,500 tons, or about seventy-five cars of twenty tons each. The towboat, a second-hand vessel with a 23-inch cylinder and seven foot stroke, must have new boilers and be thoroughly over-hauled before operated. This is the only iron or steel hull towboat now available. She will be able to handle two of these steel barges loaded, and an additional coal barge down and perhaps one lumber barge upstream. The time in transit between St. Louis and New Orleans will be five to seven days downstream and twelve to fifteen days upstream.

Cost of Equipment.

This modest equipment will cost approximately \$120,000. To handle business satisfactorily and profitably the company should have at least double this equipment, which can be had only by new construction, requiring from nine to twelve months.

There is some tonnage which can probably be transported to advantage as a towing preposition. Shipper and consignee loading and unloading barges, thereby saving these terminal expenses to the transportation company, can en-

able the company to make more favorable terms for such business.

The development of Mississippi River transportation should not, in my judgment, be considered antagonistic, or detrimental, to railway transportation interests, and it would seem probable that an exchange of business at many points could be arranged to mutual advantage. In the matter of tariffs, river transportation companies have some advantages. If I am correctly informed, water tariff rates are not amenable to the Interstate Commerce Commission, and as long as such rates apply only to water service there is no requirement that these tariffs be filed with the commission. Should, however, bills of lading be issued to interior points including rail service, such tariffs would come under the supervision of the commission. Under a general ruling of the Interstate Commerce Commission, railways are warned against reducing tariffs temporarily to cripple water transportation.

All-rail tariffs, St. Louis to New Orleans, at present are as follows:

Class rates—\$1.90, \$2.75, \$3.65, \$4.50, \$5.40, \$6.35.

Commodities — Agricultural implements, 31c to 35c; bagging, 15c; baking powder, 38; barytes, 20c; beer, 21c; brick, 15c; canned goods, 30c; coal and coke, 17c; cotton, 30c; fertilizer, 17c; export, 11c; furniture, 43c; flour, export, 10 $\frac{1}{4}$ c; bottles, 30c; grain, 10 $\frac{3}{4}$ c; export, 10 $\frac{1}{4}$ c; graniteware, 43c; glucose, export, 17c; roofing, 20c; rope, 15c; stoves, 35c; tobacco, 45c; vehicles, 31c woodenware, 35c.

In conclusion, I have been induced to accept service indefinitely with the active management of the St. Louis-Gulf Steel Barge Line Company, when incorporated, not on account of the compensation suggested, and not without sacrifice on my part, but because I believe in the sincerity of purpose of those who are to be associated with me, and I confess the proposition appeals to my civic conscience.

Winnipeg Buys U. S. Cement.

Winnipeg has contracted to buy 25,000 barrels of cement from the United States for delivery during 1912. Since the merging of all the cement interests of Canada under the head of the Canada Cement Company, says a consular report, it has been generally believed that this great corporation would absolutely control the sale of cement in the Dominion. The Lehigh Portland Cement Company, of Chicago, was the lowest bidder at 71.43 cents per 100 pounds including sacks and 60 cents exclusive of sacks. The bid of the Canada Cement Company, was 72.65 cents per 100 pounds including sacks and 61.22 cents exclusive of sacks. The city will save \$3,500 after paying a duty of 51 $\frac{3}{4}$ cents per barrel. In forwarding this bid the Lehigh Portland Cement Company agreed that in case there is a reduction in duty or any revision in freight rates the city will be given the benefit of the reduction.

Denmark and Sweden are planning international tube, for trains.

LAKE ORE PROPERTIES.

Hill Interests File Answer in Dissolution Suit.

The first answers to the government's suit for the dissolution of the United States Steel Corporation as a monopoly in violation of the Sherman law were filed at Trenton, N. J., January 29, in the United States District Court by the Hill ore interests. Three different answers were filed—one by the West Missabe Land Company, Limited, and seventeen other land and iron companies; one by James N. Hill, Walter J. Hill, Louis W. Hill and Edward T. Nichols, as trustees, and the third by J. H. Gruber, also a trustee for the Minnesota group of land and iron mining companies.

All answers contained a general denial by the defendants of the government's allegation that they entered into a conspiracy to restrain trade in steel and iron and to monopolize part of this trade. The answers differ as to the lease of ore land by the West Missabe Land Company and the other companies to the Great Western Mining Company, which, the government charged, was an act of conspiracy on the part of the group.

The West Missabe Land Company and the other corporate defendants admitted the lease, but said in their answers that it was made in good faith for the benefit of the stockholders and without any purpose to restrain trade or to create a monopoly. J. H. Gruber admitted that he was named a trustee, but denied that he joined in the lease.

The four other individual defendants admitted that on January 2, 1907, the West Missabe Land Company, with the other 17 defendant companies, entered into a lease with the Great Western Mining Company of Minnesota, and that the performance of the stipulations of the lease was granted by the United States Steel Corporation. They also admitted that the lessor agreed to mine the ore upon certain terms and ship it over the Great Northern Railway, paying therefor a royalty, and that provision was made to surrender the lease on January 1, 1915, on giving notice at least two years in advance.

It was denied that the defendants became parties to the lease with intent of preventing mining of ore and its sale to independent concerns, which might have utilized it for the building up of new and dangerous competitors to the Steel Corporation. The defendants denied any knowledge as to whether the Steel Corporation had any such purpose in view. They further denied that the royalty agreed upon was unprecedently large or in excess of the true value of the considerations granted by the lease.

Admission was made, however, that

the execution of the lease strengthened the position of the Steel Corporation. But, whatever the effect of the lease might be, the defendants averred the companies represented by them were not participants in any guilty or illegal purpose or intent, if any such purpose or intent existed.

Annual Report of Great Northern Properties.

The report of the trustees of the Great Northern iron ore properties for 1911 shows receipts of \$2,377,439, chiefly in the shape of dividends on stocks. Disbursements were \$838,197, leaving an excess of \$1,539,242. The balance of undistributed income as of the last day of the year was \$1,572,073. Figures on the period from December 7, 1906, to the end of 1911, or from date of the execution of the trust agreement to the end of the last fiscal year, show receipts of \$9,446,376 and disbursements of \$7,874,303, leaving the undistributed balance of \$1,572,073 as shown above. The balance sheet shows total assets of \$1,574,318.

The report says that "no general statement of future policy can be made at this time" apropos of the United States Steel Corporation's announcement that it would abrogate its lease of the ore properties on January 1, 1915. It is stated simply that the termination "will present questions for the decision of the trustees regarding the future management of the properties."

Colorado Vanadium Deposits are Awakening Some Interest.

According to correspondence of the St. Louis "Globe Democrat," under a Denver date, the discovery of extensive vanadium deposits in the Paradox Valley country, on the Western Slope of the Rocky Mountains, in Colorado, has given a new cast to the mining industry in the West.

This spring the prospectors who start out will be posted as to the general appearance of vanadium, and the search for that metal will rival the search for gold. There is a great demand also for tungsten.

Vanadium has a strong metallic luster, considerably resembling silver, but still more like molybdenum. When in mass it is not oxidized, either by air or water, but the fine-powdered metal quickly takes up oxygen from the air. On this account vanadium is shipped largely in mass, and sacks of this ore are to be seen on railroad stations in the vanadium country of the West, waiting shipment in that form to Liverpool.

British steel-makers have been unusually keen in their hunt for vanadium deposits, and are credited with having secured control of much of the new

vanadium country that has been developed in Colorado. In the past year the price of vanadium limits its use to special grades of steel. For the metallic content of his ore the producer is paid \$1 a pound at a railroad shipping point. For the metallic content of ferro-vanadium, or vanadic acid, the manufacturer gets from \$3.50 to \$5 per pound. The margin of profit is so large that ore carrying from 1½ to 3 per cent of metallic vanadium, after a 50-mile haul in wagons, can be shipped over a narrow-gauge railroad, transferred to standard-gauge cars, taken to Galveston from Colorado and then sent by water to Liverpool.

At present there is a mill for the reduction and treatment of vanadium ores at Placerville in the Paradox Valley country. This is the first vanadium mill to be erected in the West, but, with the discovery of other vanadium fields, no doubt there will be extensive investment in buildings and machinery. The ore is

FOREIGN IRON TRADE IN 1911.

German Iron Production.

[From the London Financial Times.]

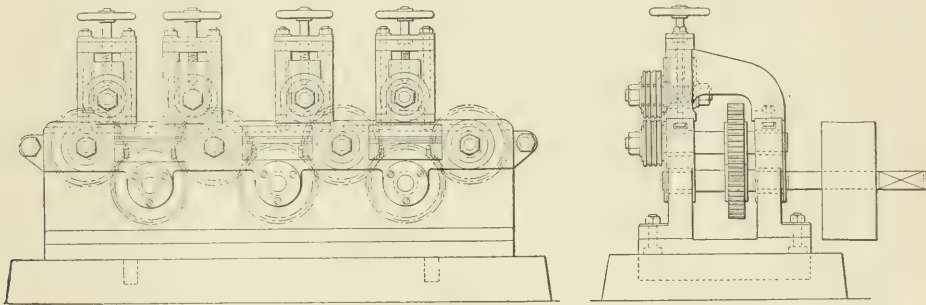
The rapidity with which statistics are collected by the Association of German Iron and Steel Producers is shown by the fact that the association has just been able to issue the figures of the production of pig iron in December and also for the whole of 1911. According to the return, the output in December reached the record monthly total of 1,377,637 metric tons, as compared with 1,307,084 tons in the corresponding month in 1910, and 1,313,896 tons in November, 1911.

The total production in 1911 amounted to 15,534,223 tons, as contrasted with 14,793,325 tons in the preceding year, or an increase of 740,898 tons. It is of some interest to note that, owing chiefly to the development of the "minette" iron ore resources in Lorraine and Luxemburg in the past few years, and more recently to

UNIVERSAL STRAIGHTENERS INSTALLED IN LOCAL MILLS.

Pittsburgh universal straighteners, manufactured by the Schleiper-Daae Company, Ferguson building, Pittsburgh, for straightening flats, rounds, squares, angles, channels, rails and special shapes, have been installed in the mills of the Jones & Laughlin Steel Company, Pittsburgh, and the Republic Iron & Steel Company, Youngstown, O.

In the Pittsburgh universal straightener the opposing rolls are adjusted in longitudinal direction, as shown in the accompanying cross section, allowing the operator to place the rolls in a position to straighten the bars of different sizes and shapes. The cut also shows the side elevation and indicates the simplicity of construction. The manufacturers of the machine claim that it will straighten flat bars or other sections continuously, taking care of 1-16-inch in rolling without



Machine for straightening flats and shapes, made by Schleiper-Daae Company, Pittsburgh.

brought in by the wagon load from the hills surrounding Paradox Valley.

The American and English companies that have entered the field are not only buying ore from individuals, but are conducting extensive prospecting and development work. They have bought many mining claims and have given that part of the country a "boom" aspect that reminds old-time Coloradoans of the early days of gold and silver discoveries. Deposits have been opened throughout an area of more than 400 square miles, indicating that the industry will be permanent.

The discoveries in Colorado have caused deep interest in other mining States and the inquiries regarding the new metal would indicate that every prospector who heads for the Rockies this spring will be something of a vanadium expert. He will also know about tungsten.

New York State chartered 8,357 new companies during 1911.

the growing importation of similar ore from the Muerthe and Moselle district in the east of France, the production of pig iron in Germany has doubled since 1901, when the output of pig iron only totaled 7,880,000 tons.

A further very considerable growth in the manufacture of pig iron in Germany may be expected in the course of the next few years, beginning with the present year. Apart from the erection of new blast furnaces in connection with existing iron and steel works, three entirely new iron and steel works of enormous dimensions are approaching completion in Lorraine-Luxemburg at Hagendingen and Esch, and these alone will have a total annual capacity of about 1,600,000 tons of pig iron. The increase in the productive capacity for the whole of the country will be about 5,000,000 tons in from three to four years from the present time, and the only question is as to where a market will be found for the enormous expansion in the output, at home.

readjustment of the machine or injuring the finished appearance of the material. The machine can be driven by electric or belt power and has a rated capacity of 10,000 feet an hour.

The greater distance between opposing rolls on this machine and those used in other methods of straightening is claimed to present a distinct advantage, in that the variations in rolling and stiffness of the bars does not cause them to bend on leaving the machine and the lessened pressure greatly reduces injury to the finish of the material.

To Discuss Faulty Steel Rails.

It was announced at a meeting of the American Railway Association in Chicago last week that the Indiana Railroad Commission of Indiana has called a meeting for next month to take up the question of faulty steel rails. This will be handled by the General Managers' Association, and the meeting called for last week was in the nature of a preliminary discussion of the question.

SUMMARY: INVESTMENT SECURITIES IN METAL INDUSTRIES

STOCK AND BOND SALES AT VARIOUS EXCHANGES.

Sales for January 25 to February 1, 1912, Inclusive.

	New York	Pittsburgh	Chicago	Philadelphia	Boston	Total Sales	High	Low	Last
American Consol.				100		100	67 1/2	67 1/2	67 1/2
Allis-Chalmers	250					250	11 1/2	11 1/2	11 1/2
Alcoa Inds. pf.	200					200	8 1/2	7 7/8	7 7/8
American Can.	8,550		1,300			9,850	12 1/2	11 1/2	11 1/2
American Can. pf.	9,100		825			9,925	33	31	31
American V. & F. Foundry	3,216					3,216	52	49 3/4	49 3/4
American V. & F. Foundry pf.	500					500	116	115 3/4	115 3/4
American Locomotive	320					320	33 1/2	32	32
American Locomotive pf.	400					400	103 1/2	103	103
American Steel Foundry	1,540					1,540	30	29	29
American Shipbuilding			91			91	50	50	50
American Steel				103		103	78 1/2	78	78
American Steel pf.				285		285	101	100	101
American Locomotive pf.	806			211		1,017	103 1/2	103	103 1/2
Bethlehem Steel	1,520					1,520	32	31	31 1/2
Bethlehem Steel pf.	1,000					1,000	61	59 3/4	60 1/4
Consolidated Steel				20		20	44 1/2	44 1/2	44 1/2
Consolidated Steel & Iron				1,568		1,568	44	43 3/4	43 3/4
Consolidated Steel & Iron pf.	800					800	26 1/2	26	26
Crucible Steel			925			925	83 1/2	80	81
Crucible Steel pf.			400			400	50 1/2	49 5/8	50
Crucible Steel & Iron				1,940		1,940	55	53 3/4	53 3/4
Crucible Steel & Iron pf.	4,000			216		4,216	130 1/2	129 3/4	129 3/4
Crucible Steel & Iron pf.	400					400	75 1/2	75	75 1/2
Crucible Steel & Iron pf.	11,610					11,610	41 1/2	36	36 1/2
Crucible Steel & Iron pf.	1,800		50			1,850	108 1/2	105 1/4	105 1/4
Crucible Steel & Iron pf.	119					119	120	116 1/2	120
Crucible Steel & Iron pf.	250					250	30	28 1/2	28 1/2
Crucible Steel & Iron pf.	200					200	81	81	81
Crucible Steel & Iron pf.	2,628					2,628	28 1/2	27 3/4	28 1/2
Crucible Steel & Iron pf.	91					91	28	27 3/4	28
Crucible Steel & Iron pf.	214					214	100 1/2	89 3/4	100 1/2
Crucible Steel & Iron pf.	80					80	6	6	6
Crucible Steel & Iron pf.	105					105	28 3/4	26	26
Crucible Steel & Iron pf.	4,740					4,740	54	53	53
Crucible Steel & Iron pf.	100					100	14 1/2	14	14 1/2
Crucible Steel & Iron pf.	500					500	94	94	94
Crucible Steel & Iron pf.	100					100	56	54 1/2	54 1/2
Crucible Steel & Iron pf.	100					100	18	17 1/2	18
Crucible Steel & Iron pf.	1,000					1,000	81	80	80
Crucible Steel & Iron pf.	25					25	103	103	103
Crucible Steel & Iron pf.	187					187	100 1/2	100	100
Crucible Steel & Iron pf.	100					100	32 1/2	32 1/2	32 1/2
Crucible Steel & Iron pf.	25					25	101	101	101
Crucible Steel & Iron pf.	100					100	158 1/2	158	158
Crucible Steel & Iron pf.	900					900	29	29	29
Crucible Steel & Iron pf.	100					100	101	101	101
Crucible Steel & Iron pf.	6,070					6,070	27 1/2	22	22
Crucible Steel & Iron pf.	5,210					5,210	84 1/2	78 1/2	78 1/2
Crucible Steel & Iron pf.	3,25					3,25	41	39 1/4	39 1/4
Crucible Steel & Iron pf.	20					20	16	16	16
Crucible Steel & Iron pf.	1,033					1,033	51	50	50
Crucible Steel & Iron pf.	1,000,000	1,895	1,925	68,870	28,341	1,167,711	66 3/4	58 3/4	58 3/4
Crucible Steel & Iron pf.	11,870					12,094	11 1/2	10 3/4	10 3/4
Crucible Steel & Iron pf.	140					140	94 1/2	89 1/2	94 1/2
Crucible Steel & Iron pf.	900					900	68 1/2	65	68 1/2
Crucible Steel & Iron pf.	1,665					1,665	21	19	20 1/2
Crucible Steel & Iron pf.	300					300	80 1/2	79	79
Crucible Steel & Iron pf.	246					246	158	156 3/4	157
Crucible Steel & Iron pf.	1,000					1,000	72 1/2	63 1/2	63 1/2
Crucible Steel & Iron pf.	110					110	120	119 1/2	119 1/2
Crucible Steel & Iron pf.	45					45	21	20	20
Crucible Steel & Iron pf.						43	11 1/2	11	11 1/2

On 1/11/12 are listed on New York Stock Exchange, when listed on that exchange. New York totals include sales on Consolidated Exchange.

BOND SALES.

	High	Low	Last
NEW YORK.			
5,000 Allis-Chalmers 58	54	52 1/2	52 3/4
5,000 Allis-Chalmers Steel 58	95 1/2	94 1/2	95
5,000 Am. Can. 1st 58	100	100	100
5,000 Am. Can. 2nd 58	80 1/2	80 1/2	80 1/2
5,000 Am. Can. 3rd 58	99	99	99
5,000 Am. Can. 4th 58	93 1/2	93 1/2	93 1/2
5,000 Am. Can. 5th 58	92	92	92 1/2
5,000 Am. Can. 6th 58	97	96 3/4	96 1/2
5,000 Am. Can. 7th 58	80 1/2	80	80
5,000 Am. Can. 8th 58	99 1/2	99 1/2	99 1/2
5,000 Am. Can. 9th 58	94 1/2	94 1/2	94 1/2
5,000 Am. Can. 10th 58	100 1/2	100 1/2	100 1/2
5,000 Am. Can. 11th 58	104	104	104
5,000 Am. Can. 12th 58	104	104	104
5,000 Am. Can. 13th 58	102 1/2	102 1/2	102 1/2
5,000 Am. Can. 14th 58	95	94 1/2	94 1/2
PITTSBURGH.			
25,000 Pitts. Coal 58	91 1/2	91	91 1/2
11,000 Pitts. Coal 68	115 1/2	115 1/2	115 1/2
CHICAGO.			
11,000 Chi. Pneu. Tool 58	91	90 1/2	91
10,000 Western Elec. 58	102 1/2	102 1/2	102 1/2
BALTIMORE.			
121,000 Balt. Power 4 1/2 58	89 1/2	89 1/2	89 1/2
2,000 Balt. Pow. notes	100	100	100
2,000 Baltimore C. & C. 58	93	93	93
32,000 Balt. Water & P. 58	92 1/2	92	92 1/2
BALTIMORE STOCKS.			
20 Con. Coal	High	Low	Last
5 Con. Power pf.	104	102	102
480 Pa. Wat. & P. Co.	63 1/2	63	63
25 U. S. Steel	61 1/2	61 1/2	61 1/2

FISCAL STATEMENTS

Republic Iron & Steel.

The Republic Iron & Steel Company has issued its semi-annual report, covering the six months ended December 31, 1911. The income account compares as follows.

	1911	1910
*Net earnings, operation	\$1,470,812	\$1,951,454
Int. and div. from investments	40,956	
Total profits	\$1,470,812	\$1,992,411
Depreciation, rentals etc.	\$180,694	\$300,168
Extinguishing fund.	122,007	133,511
Total deductions	\$302,702	\$433,679
Net profits	\$1,168,110	\$1,558,731
Interest	369,338	290,882
Surplus	\$798,772	\$1,267,850
Prof. div.	875,000	875,000
Deficit	\$76,228	\$392,850
Prev. surplus	\$5,362,446	\$4,954,660
Total surplus	\$5,286,218	\$5,347,510

* After deducting charges for maintenance and repairs amounting to \$737,501, as against \$680,630 in 1910. † \$598,375 in 1909 and \$401,856 in 1908. ‡ Equal to 3.19 per cent on \$25,000,000 preferred stock, as compared with 5.07 per cent earned on same stock for the corresponding six months of previous year. § Surplus.

After paying the dividend on the preferred there was a deficit of \$76,228, whereas for the last half of 1910 there was a surplus of \$392,850. The company's profit and loss surplus was \$5,286,218, against \$5,347,510.

Chairman John A. Topping told the stockholders that the gross volume of business compared favorably with the best previous six months, but that prices had been the lowest in the history of the company.

Dominion Iron & Steel.

The Dominion Iron & Steel and the Dominion Coal Companies at meetings at Montreal January 27, each authorized the issue of \$3,500,000 of income bonds which they are authorized to exchange for the preferred stocks of the Dominion Steel Corporation. A resolution was passed confirming the previous resolution to issue 70,000 preference shares to the value of \$7,000,000.

Herring-Hall-Marvin Safe.

A special meeting of the stockholders of the Herring-Hall-Marvin Safe Company, whose plant is at Hamilton, Ohio, has been called for February 8, in New

York city, to authorize an increase in the capital stock of the company from \$700,000 to \$1,400,000, by the issuance of 7 per cent cumulative preferred stock. The annual meeting of the company will be held on the same date.

Defunct Adyston Pipe & Foundry Co.

A final dividend has been paid to the stockholders of the old Adyston Pipe Foundry Company, at Adyston, near Cincinnati, which sold its plant 13 years ago to the United States Cast Iron & Pipe Foundry Company. The final payment is 72 cents a share on the \$1,500,000 capital of the company.

When the old Adyston Company disposed of its plant to the present owner, the stockholders of the Adyston Company received 50 shares of common and 50 shares of preferred for each 100 shares of Adyston Company stock held in addition to a cash payment of \$63 a share. After this money was distributed to the shareholders a damage suit was sustained against the company, and in order to meet the payment an assessment was later made on the shareholders of 50 cents a share.

The final dividend returns this assessment of 50 cents, together with the additional payment of 22 cents. William Cooper Proctor is president of the company, and Thomas C. Shipley, of Cincinnati, the treasurer.

Dividend Announcements.

U. S. STEEL.—Regular quarterly dividends of $\frac{1}{4}$ per cent on the common and $\frac{1}{4}$ per cent on the preferred stocks.

PRESSED STEEL CAR.—Regular quarterly $\frac{1}{4}$ on preferred, payable February 21 to stock of record January 31; transfer books closed January 31, reopen February 21.

PULLMAN COMPANY.—Quarterly \$2 per share, payable February 15, to stock of record January 31.

AMERICAN RADIATOR.—Regular quarterly 2 per cent and regular year-end extra dividend of 2 per cent on common, payable March 30; usual quarterly $\frac{1}{4}$ on preferred, payable February 15; also extra stock dividend of 10 per cent, common stock, to common stockholders, payable March 30.

BUSINESS TROUBLES.

STORY BRUSH COMPANY.—Execution has been issued and sheriff has levied on Story Brush Company, manufacturers of twisted wire brushes, 51 Cliff street, New York.

LENOX IRON WORKS (New York).—In New York courts, January 29, Judge Hough dismissed the involuntary petition filed against the Lenox Iron Works of Park avenue and One Hundred and Thirty-second street.

CHARTERS TO NEW CORPORATIONS

West Virginia.

J. W. Wright Company, Inc., principal office Wriston, Fayette county, W. Va., to contract for construction of railroad works, for construction of private roadways and to do a general mining business; \$10,000. J. L. Vaughan, Shawsville, Va.; J. W. Wright, Wriston, W. Va., and A. B. Hunt, J. B. Vaughan and Abram P. Staples, Jr., of Roanoke, Va.

Post-Stout Land Company, principal office Clarksburg, W. Va.; real estate and also mining; \$25,000. Lee Stout, Lillie M. Stout, Howard Post and Mary E. Post, of Clarksburg, W. Va., and M. R. Post, of Jarvisville, W. Va.

Cunningham Oil & Gas Company, Buckhannon, W. Va., to drill for oil and gas in Clark district of Harrison county; \$8,000. J. M. King, Eugene Brown, William Post, C. D. Munson and L. H. Trippett, all of Buckhannon, W. Va.

Pinson Fork Coal Company, Huntington, W. Va., to mine coal and manufacture coke in State of Kentucky; \$100,000. A. E. Bush, E. M. Watts, T. J. Bryan, Donald Clark and Z. T. Vinson, all of Huntington.

Amherst Coal Company, Red Star; to mine, buy and sell coal and other minerals; \$50,000. George M. Jones, W. R. Thurmond, of Oak Hill; J. S. Thurmond, of Alderson; C. T. Thurmond, of Thurmond, and James L. Montgomery, of Charleston.

Amherst Coal Company, principal offices Red Star, W. Va.; to mine, buy and sell coal, oil and iron ore and other minerals; \$50,000. George M. Jones and W. R. Thurmond, Oak Hill, W. Va.; J. S. Thurmond, Alderson, W. Va.; C. T. Thurmond, Thurmond, W. Va.; James L. Montgomery, Charleston, W. Va.

Buffalo Lick Royalty Company, principal office Charleston, W. Va.; to deal in royalties in oil, gas and coal lands; \$12,700. E. G. Pierson, Marshall Higginbotham, F. A. McGrew, F. J. Hill, Irwin Goldbarth, Charleston.

Grafton Drilling Company, Grafton, to operate for oil and gas; \$10,000. Charles D. Durbin, Earl B. Jenkins, Harry M. Murray, Patrick H. McGrady, Ona C. Jeffreys, all of Grafton.

Clarksburg & Philippi Traction Company, principal office Clarksburg, W. Va.; to build a railroad commencing at or near Clarksburg, W. Va., thence to a point near Belington, Barbour county, W. Va., also from a point in the aforesaid route at or near Craigmoor, in the county of Harrison, W. Va., to a point at or near Buckhannon, Upshur county, W. Va.; \$300,000. Thomas L. Nutter, Clarksburg, W. Va.; E. R. Dyer, J. C. Watson and R. J. Dunham, Philippi, W. Va.; Charles C. Robb and J. P. Nezessary, Fairmont, W. Va.

Safe Auto Tire Company, of Martinsburg, to manufacture and sell automobiles and automobile supplies; \$125,000. J. W. Scott, G. W. Buxton, E. S. Bottomly, W. C. Kilmer and S. W. Walker, of Martinsburg.

Pennsylvania.

Waynesboro Manufacturing Development Company, Waynesboro, Franklin county; \$25,000. George B. Beaver, D. M. Wertz, A. R. Warner.

McLane Schanck Hardware Company, Linesville, Crawford county, Pa.; \$30,000; manufacturing, buying, selling and dealing in builders' supplies, maple sugar evaporators and other machinery; Garrett C. Schanck, Labazure O. McLane and Nina A. McLane, Linesville, Pa.

Houston & Scott, incorporated, Wilkes-Barre, Pa.; \$50,000; building and constructing buildings, buying and selling at wholesale and retail materials that enter into construction. Leslie R. Houston, J. L. Houston, Kingston, Pa.; Kenneth L. Lewis.

Selingsgrove Gas Light Company, Sunbury, Pa.; \$5,000; manufacture and supply of gas for light in borough of Selingsgrove, Pa. George W. Beck, Sunbury; George Parkman, Philadelphia; J. Fred Schaffer, Sunbury.

Selingsgrove Gas Company, Sunbury, Pa.; \$5,000; supply gas for heat and fuel. George W. Beck, Sunbury; George Parkman, Philadelphia; J. Fred Schaffer, Sunbury.

Connellsville Coke Company, Connellsville, Pa.; \$33,000; mining coal and manufacturing coke; sale of coal and coke. J. Fred Kurz, W. D. McGinnis, R. S. Matthews, Connellsville, Pa.

Etna-Connellsville Coke Company, Connellsville, Pa.; \$120,000; mining coal and manufacturing coke, sale of coal and coke. Cyrus Echard, G. W. Campbell, D. M. Parkhill, Connellsville, Pa.

Wenz Company, Kutztown, Pa.; \$200,000; dealing and trading in marble, granite, flagging and other stone. William Wenz, Kutztown, Pa.; J. D. Wenz, Shoemakerville, Pa.; Edwin N. Gackenbach, Allentown, Pa.

Quincy Engine Company, Quincy, Franklin county, Pa.; increase capital from \$50,000 to \$150,000. N. S. Good, secretary.

Shickshinny Water Company, Shickshinny, Pa.; increase capital from \$24,000 to \$50,000. M. B. Hughes, secretary.

Sinking Springs Water Company, Sinking Springs, Berks county, Pa.; increase capital from \$10,000 to \$50,000. Henry S. Clauser, secretary.

New Kensington Stone Company, Wilkensburg, Pa.; increase capital from \$50,000 to \$75,000. L. A. Nichols, secretary.

Perkasie Water Supply Company, increase indebtedness from \$40,000 to \$55,000. Tobias S. Crouthamel, secretary (office Perkasie, Pa.).

Southern States Lumber Company, Pittsburg; increase indebtedness from \$58,600 to \$143,023.72. E. H. Stoner, secretary.

Capouse Gas Company, Scranton, Pa.; increase capital from \$25,000 to \$35,000. Joseph Jeffrey, treasurer.

Dauphin Consolidated Water Supply Company (Philadelphia), increase cap-

ital by 156 shares, par value \$50 each, aggregating \$7,800. J. S. Vanzandt, assistant treasurer.

Lycoming Foundry & Machine Company, Williamsport, Pa.; increase capital from \$100,000 to \$150,000. John H. McCormick, secretary.

Easton Gas & Electric Company, (Easton, Pa.), decrease capital from \$2,000,000 to \$1,000,000. Emerson L. Franklin, secretary.

Ohio.

Three-In-One Implement Company, Akron; agricultural implements; \$30,000. Jason S. Donnelly, Claude B. Carpenter, Walter E. Case, Martha E. Murphy and George W. Auten.

Kuehn-Wilson Electric Company, Canton; capital increased from \$10,000 to \$20,000. B. G. Vincent, president; A. C. Will, secretary.

Pneumatic Cupola Company, Ironton; patent invention for the purification of cast iron by pneumatic process; \$50,000. Littleton Powls Hoult, George Bary, William J. Mahoney, Fred J. Horschel, John B. Corns.

Diamond Construction Company, Akron; general construction; \$10,000. Charles W. Hawkins, Ralph S. Hamlin, Frank E. Wohlfeld, Charles E. Smoyer, Katherine Wohlfeld.

Maranville Lubricating Company, Cleveland; machinery for the purification and filtration of oils and other liquids; \$100,000. Christian Girl, P. A. Connelly, W. H. Clymer, M. J. Monkopp, Ernest A. Feazel, Ernest W. Farr.

Ohio Wrecking Company, Toledo; wrecking buildings, etc.; \$12,500. Charles E. Haynes, Edward H. Rhodes, Jr., F. C. Wenzel, Caius K. Southard, Lawrence F. Conway.

Altimo Gas Company, Canfield; drilling for gas; \$10,000. W. J. Smith, John Rowan, Jared P. Huxley, E. W. Smith, Jr., Ira C. Harper.

Syndicate Pottery Manufacturing Company, East Liverpool; general pottery; \$1,600. C. H. Bauman, C. W. Bauman, J. M. Larkins, Rud Schylander, James C. B. Beatty.

Ohio Wood Preserving Company, Youngstown; lumber; \$150,000. J. P. Wilson, T. A. Jacobs, U. C. DeFord, J. W. Blackburn, F. J. Heim.

Brighton Hammered Nut & Manufacturing Company, Sandusky; name changed to Brighton Nut & Manufacturing Company.

International Automatic Telephone Company, Springfield; manufacturing, using and leasing telephone machinery and equipment; \$3,000. William H. Bruce, Jr., Finley O. Cummings, Helen C. Bruce, Henry C. Wiseman and Paul C. Martin.

Conrad Brick Manufacturing Company, Columbus; common and face building brick; \$40,000. W. D. Brickell, David Shertzer, John A. Conrad, J. M. Adams and David Lehman.

Bristol Mining Company, Cleveland; mining, smelting and manufacturing all kinds ores, minerals and metals; \$500,000. William Wisner White, T. H. Gary, Luther Day, O. D. Duncan and N. B. Snively.

Byesville Motor Company, Byesville; gas engines and machinery; \$10,000, 200

shares of \$50. Robert S. Hall, Charles R. Austin, J. A. Pryer, E. M. Sperer, J. Glaser.

Trenkamp Stove & Manufacturing Company, Cleveland; increases capital from \$75,000 to \$150,000.

J. M. Blair Brick Company, Cincinnati; increase of capital from \$5,000 to \$35,000.

Horseshoers & Wagonmakers' Supply Company, Cincinnati; tools, implements, machinery and sundries; \$10,000. Two hundred shares of \$50 each. M. A. Boehr, Emil A. Hauck, A. B. Chisholm, F. H. Alden, J. H. Ahlbrandt, Jr.

Cincinnati Gear Company, Cincinnati; increase of capital from \$11,000 to \$33,000. Philip Fosdick, president; John H. Clermont, secretary.

Signet Oil Company, Cleveland; producing and refining; \$5,000. William F. Kees, R. M. Moore, Y. Y. Shepard, Frank J. Kirby, Fred Disburg.

Goby Engine Company, Cleveland, automobile and other engines and parts; \$100,000; 1,000 shares of \$100 each. Christian Girl, P. A. Connelly, W. K. Clymer, W. J. Moskopp, Ernest A. Feazel, Ernest W. Farr, John B. Hull.

Snyder, Thorne & Shaw Company, Toledo, general construction; \$40,000; 400 shares of \$100. Carleton Shaw, E. J. Snyder, Howard Thorne, Mildred Vandenberg, Edgar H. Johnson.

D. M. Cooper Company, Cincinnati, engine and boiler equipment, automobile accessories; \$10,000; 100 shares of \$100 each. H. L. Hagerman, Charles E. Dornette, William H. Mitchell, W. E. Kampfmueller and George A. Dornette.

Marion Woodworking Company, Marion; manufacture of furniture and other articles from wood; \$10,000; 400 shares of \$25. J. B. Peoples, J. W. Peoples, T. N. Porter, John E. Babcock and C. J. Renner.

Roekel Plumbing & Electrical Company, Zanesville; name changed to Roekel Company.

Winton Gas Engine & Manufacturing Company, Cleveland; marine and stationary engines; \$200,000. Alexander Winton, James Winton, W. S. McKisstry, La Belle Winton and Sterling Parks.

Youngstown Slate & Tin Roofing Company, Youngstown; slate, tin and other roofing; \$10,000. Robert Roseman, George F. Ockerman, A. Hefferman, A. M. Henderson and J. H. C. Lyon.

Indiana.

Inland Sales Corporation of Connerville; sales agent for manufacturers; \$10,000. Frank B. Anstead, William F. Thomas and Herman M. Williams.

Davis Automatic Hydro-Gravity Company, Indianapolis; to manufacture hydro-gravity motors; \$10,000. H. N. McKee, W. F. Orlom, R. G. Hendricks and J. H. Vaught.

Indianapolis Lead & Zinc Company, Indianapolis; developers; \$2,500. A. P. and E. M. Craft, C. W. Craig, W. C. Haucisen and J. H. Billingsley.

Randolph Oil & Gas Company, Ridgeville; developers; \$30,000. Directors: Oscar Harnish, Gilbert Neff, Albert Voecks, G. A. Ure and August Danke-meyer.

Hymen-Michaels Company, Illinois;

general iron goods manufacturing; \$225,000; certified in Indiana for \$20,000. Isaac Block, president.

New River & Ohio Coal Company, West Virginia, producers; \$100,000; certified in Indiana for \$2,500 to maintain an agency in Indianapolis. M. T. Roach, president.

H. & H. Manufacturing Company, Evansville; to manufacture furniture; \$15,000. G. A. Hartmetz, O. A. Jensen, M. Hartmetz, J. M. Funke and William Gramelspacher.

Wisconsin Bridge & Iron Company, Wisconsin; construction contractors; \$500,000; certified in Indiana for \$10,000. William Henrichs, president.

Illinois.

Central Illinois Railway Company, Aurora, Ia.; construct and operate a railway from Chicago, Ill., to Muscatine; \$25,000. George E. Ackerman, John M. Raymond, William E. Williamson, all of Aurora.

Calhoun Clay Manufacturing Company, Missouri corporation; manufacture clay products; \$300,000. J. L. Anderson, Golden Eagle, Ill.

Rene Safety Auto Wheel Manufacturing Company, Chicago; manufacturing automobiles and accessories; \$50,000. J. Rene Ayitte, Charles F. McKay, Jerome E. Evans, Chicago, Ill.

Thermoid Rubber Company, New Jersey corporation; manufacture mechanical and rubber goods; \$300,000. Elbert C. Ferguson, 69 West Washington street, Chicago.

Mollman Harness Company, East St. Louis; manufacture harness, saddlery and vehicles; \$10,000. John D. Mollman, Fred W. Mollman, East St. Louis, Ill.

Roberts Sash & Door Company, Chicago; manufacture mill work; \$100,000. George E. Roraback, L. I. Abbott, Leonard F. Runyon, Chicago.

Flat Creek Coal Company, Chicago; mining coal; \$10,000. Edward O. Shurtleff, Henry P. Heizer, Mary Schmitz, Chicago.

Koehring Machine Company, Wisconsin corporation; dealing in machinery; \$100,000. C. E. Hillman, 857 Peoples Gas building, Chicago.

International Brick & Clay Products Exposition Company, Chicago; \$15,000; conduct exhibitions of brick and clay products. R. C. Penfield, William Schlake, A. T. Leach.

Granitine Manufacturing Company, Chicago; \$2,500; manufacturing and dealing in granite, cement, limestone, etc. Joseph A. Washick, Lewis D. Campbell, Robert R. Crogan.

Northern Illinois Granite Company, Kankakee; marble granite and concrete work; \$20,000. J. B. Hazlett, Albert G. Tanner, L. W. Hazlett, Kankakee, Ill.

Keokuk, Nauvoo & Fort Hamilton Electric Railway Company, construct and operate a railway from Keokuk, Iowa, to Nauvoo, Ill.; \$650,000. William F. Fisher, Charles H. Petech, Frederick M. Catlin, St. Paul, Minn.

Central Millwork Company, Chicago; manufacture millwork; \$100,000; Samuel B. King, Frank Peska, Harry R. Hurlbut, all of Chicago.

Great Western Cement, Sand & Stone Company, Esmond; manufacture ce-

ment, lime and dealing in sand and stone; \$200,000. William H. Ashford, Thomas M. Cliffe, Peter Hyse, Esmond, Ill.

Kentucky.

Magnet-Jellico Coal Company, Dean-ton; \$50,000. Isaac Glickman, Katie Glickman and Charles Schu.

Caldwell Coal Company, Browder; \$60,000. C. D. M. Greer, E. J. Manigan and S. C. Eaves.

Munfordville Milling & Lumber Com-pany, Munfordville; \$5,000. A. R. Spen-cer, John D. Craddock and Jennie Crad-ock.

Alabama Coal & Coke Company, Mor-ganfield; \$5,000. J. F. Stallings, A. Ma-ben Hobson and S. M. Auxford.

Hendrie Coal Company, Beech Creek; \$25,000. John Hendrie, Charles Hendrie and E. K. Hendrie.

Paducah Water Company, Paducah; increasing capital from \$250,000 to \$300,000.

Harlan Fuel Company, Harlan; \$25,000. Roy Wilholt, D. B. Cornett and W. W. Lewis.

Covington Coopers Company, Was-iota; \$1,000. E. G. Saulsberry, H. H. Asher and A. J. Asher, Jr.

P. Wirth & Sons, Louisville; \$5,000; contractors. Philip Wirth, Sr., Philip Wirth, Jr., and Frank C. Wirth.

Kentucky Paper Box Company, Louis-ville; \$30,000. F. S. Bishop, C. T. Haydon and G. B. Shumate.

Harlan Coal Company, Louisville; \$300,000. K. U. Maguire, L. W. Farmer, F. F. Snead and Herman D. Newcomb.

Missouri.

Concrete Construction Company, of Kansas City; \$10,000. H. B. Thompson, C. A. Muhlebach and A. W. Graham.

Kelly-Springfield Tire Company, of New York; \$10,000, of which \$1,000 is to be used in St. Louis.

Simon-De Vine Welding Company, St. Louis; \$5,000. Alfred Simon, R. D. Mills, R. S. Mills. To do a general welding, plumbing and electrical repair business.

Electric Light & Power Company of Bevier; \$10,000. J. W. Nisbeth, D. D. Rowland, W. R. Morgan and others.

F. H. Bussmeyer Gas Producer & Machinery Company, St. Louis; \$10,000. Frederick W. Bussmeyer, Magdalena Bussmeyer, William J. Bussmeyer, G. H. Wilson. To manufacture and deal in all kinds of gas and electric and steam appliances and machinery, etc.

Enterprise Sand & Mining Company, Herculaneum; \$10,000. J. D. Buchanne, J. M. Monie, T. E. Kirk.

Continental Equipment Company, of St. Louis; \$25,000. John Shuford, Ed-ward J. Ryan, Fred Schmitt.

Continental Equipment Company, St. Louis; \$25,000. John Shuford, Edward J. Ryan and Fred Schmitt. To handle au-tomobile accessories, etc.

American Wrecking Company of St. Louis; capital increase from \$5,000 to \$10,000.

Petty Tire & Rubber Company, of St. Louis; capital increase from \$6,000 to \$50,000.

Twin Grove Mining Company, of

Webb City; \$25,000. Charles B. Guinn, Charles T. Orr, J. W. Weaver and others.

Universal Motor Truck & Traction Engine Company, St. Louis; \$250,000. William H. Taylor, John Beltram and A. R. Shafer. To do a general motor traction engine business.

Meisner Lumber & Manufacturing Company, Altenberg; \$50,000. Martin D. Meisner, John Meyer and Benjamin M. Hemmann.

Moss-Satterlee Electrical & Railways Supplies Company, \$5,000. William B. Satterlee, Benton C. Moss, Jay Richard-son.

New Jersey.

The Miller Engineering & Construc-tion Company, Camden, N. J.; contract-ing and construction in all its branches; \$50,000. Frank A. Kuntz, N. G. Wilt-shire, I. I. Burke, 304 Market street, Camden.

Halbury Engineering Company, Cam-den, N. J.; engineering, contracting, con-struction work, etc.; \$125,000. Charles P. Haliburton, Carlos P. Steelman, Ma-rino Lombert, 104 Market street, Cam-den.

Firex Company, of America, Jersey City; manufacture fire extinguishing ap-paratus, and chemicals; \$60,000. Volk-ert May Schmidt, 378 Washington ave-nue, Newark; Eugene E. Vonseyfried, 144 Orchard street, Newark; Walter E. O. Shultz, 361 Elm street, New Haven, Connecticut.

Diamond Specialty & Supply Com-pany, Camden, N. J.; deal in railroad supplies; \$50,000. Francis D. Casan-ave, Jr., William F. Einsenhower, John F. Joline, all of Camden.

Allen B. Laing Company, Plainfield, N. J.; manufacture motors, dynamos, electrical machinery, etc.; \$20,000. Allen B. Laing, 48 Washington avenue; George F. Graves, 301 East Fifth street; Augus-tus V. Searing, Jr., 235 East Sixth street; Isabel Milne Laing, 48 Washington ave-nue; Eugene M. Laing, 326 Central ave-nue, Plainfield.

Rudolph Liebemann Manufacturing Company, Newark, N. J.; manufacture metal goods; \$100,000. Rudolph Lieb-mann, George G. Liebmann, Arthur R. Liebmann, New York city; Ernest F. Keer, Newark.

Vixen Tool Company, Camden, N. J.; manufacture steel, iron, coke, copper, etc.; \$2,000. F. R. Hansell, George H. B. Martin, John A. MacPeak, all of 419 Market street, Camden.

Lehigh Valley Coal Sales Company, Jersey City; to deal in coal, coke, metals, ores, woods, fuels, etc.; \$10,000. John W. Skeele, Madison, N. J.; Paul Moore, 4 East Fifty-fourth street, New York; George N. Wilson, 5959 Woodbine ave-nue, Overbrook; Lyman D. Smith, 699 St. Mark's avenue, Brooklyn, N. Y.

J. T. Stevens' Sons & Company, Bur-lington, N. J.; manufacture doors, sash, blinds, stairways and millwork for use in buildings; \$75,000. Joseph P. Severns, Albertus L. Severns, Samuel J. McClenahan, all of Burlington, N. J.

North Jersey Ansite Company, Mor-ristown, N. J.; cover, coat and mix crushed stone, or other material with as-phalt, tar and other preparations; \$100,000. Frederick W. Schmidt, Edward A.

Quayle, Irving W. Wortman, all of Mor-ristown, N. J.

West Shore Trap Rock Company, Morristown, N. J.; quarry and crush stone; quarries, gravel pits, etc.; \$100,000. Frederick W. Schmidt, Irving W. Wort-man, Edward A. Quayle, all of Morris-town, N. J.

Delaware.

Pittsburgh-Superior Mines Company, Delaware Trust Company; \$500,000. H. L. Rogers, E. E. Roberson, Harry W. Davis, all of Wilmington.

High Grade Oil Refining Company, Corporation Trust Company; \$1,000,000. E. E. McWhiney, William J. Maloney, Norman P. Coffin, all of Wilmington.

Delaware Contracting & Construction Company, Delaware Registration & In-corporator's Company; \$100,000. J. S. E. Pardee, Collingwood, N. J.; George and Joseph Messick, H. M. McCoy, B. D. Wright, William T. Gale, W. C. Kelly, all of Chester, Pa.

Roman Manufacturing Company, Cap-ital Trust Company of Delaware; \$5,100. Ludwig Isenberg, David Isenberg, Oscar Isenberg, all of Philadelphia.

Interstate Contracting Company, Dela-ware Corporation Company; \$15,000. William King, Jr., Palmyra, N. Y.; John J. Schick, Stroudsburg, Pa.; J. G. Gray, Wilmington.

Northern Sanitary Company, Corpora-tion Registry Company; \$500,000; Ed-ward P. Pritz, Aaron Finger, Daniel O. Hastings, all of Wilmington.

Pressed Steel Truck Company, United States Corporation Company; \$250,000. Pinckney E. Wood, Henry Caro, Mem-phiss; Dewitt E. Griswold, New York city.

Hoder Chemical Company, to manu-facture conduits and terra cotta products of all kinds; \$10,000. Ralph Hoder, M. W. Guernsey, David Landau, all of Scranton, Pa.

Calcite Transportation Company; to en-gage in transportation of coal, lime and other commodities over the Great Lakes and tributaries; \$630,000. William F. White, of New York; Frederick T. Whitmire, Charles H. Ruttle and Joseph J. O'Brien, of Detroit, Mich., and Harry W. Davis, of Wilmington.

Simplex Specialties Company, chang-ing name to Selax Specialties Company; headquarters, Wilmington.

American Poured Concrete Steel Moulds Corporation, to build steel moulds and manufacture kindred tools and appliances; \$50,000. John P. Jack-son, Robert J. Harlan, of Washington, D. C., and Hary A. Hood, of New York.

Texas.

Little Giant Stove & Novelty Manu-facturing Company, Fort Worth; \$40,000. Lewis Alverson, J. H. Green and G. H. Colvin.

Standard Mechanical Equipment Company, Houston; \$20,000. W. H. Earl, W. A. Dilzell and D. H. Mur-phy.

Riveria Construction Company, Hous-ton; \$3,000. Samuel F. Lilligreen, Carl C. Henny and S. A. Robertson.

Star Pottery Works, San Antonio, filed amendment increasing capital stock from \$16,000 to \$50,000.

INDUSTRIAL WORLD

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The Steel Corporation's Defense.

IT HAS been made quite clear by the UNITED STATES STEEL CORPORATION'S answer to the Government's petition, filed in the UNITED STATES COURT for the district of New Jersey last Thursday, that the affairs of the Corporation for years past, if not for the entire 11 years of its existence, have been conducted in strict accord with the policy which CHAIRMAN GARY has outlined at so many times and in so many respects in his public utterances. The defense of the STEEL CORPORATION is very largely an elaboration of Mr. GARY's various statements.

Quite recently, Mr. GARY made a statement that he regarded the Government suit against himself personally, as it attacked the policies which he had formulated and defended. A little fun was poked at Mr. GARY, his altruistic position being a little stronger than some of his critics could compass; but the formal defense of the STEEL CORPORATION in full legal form shows that the position is precisely as outlined then by Mr. GARY. Its defense is precisely the defense he has always made and the policy and acts which it now defends are those for which Mr. GARY was directly responsible.

There was an expectation in many quarters that the bringing of the Government suit would be followed by an entire change of front on the part of the STEEL CORPORATION; that while it had

been mild and suave in its defense to the public, it would when attacked legally "show its teeth" and undertake to defend itself along altogether different lines. The answer filed last week shows that such expectations were unfounded. The Corporation's reply to legal proceedings is in precisely the same spirit and along the same lines as its defense previously made before the public. This is favorable to an early settlement of the suit. There is no new element injected.

The Corporation further lends its aid to a quick settlement by frankly admitting various things charged in the Government's petition. As litigation ordinarily goes, such things would not be admitted, and by forcing the Government to prove everything the Corporation might score several points. The Corporation shows that even when driven to the extremity of defending a suit to be prosecuted with all the resources the Government can command, it maintains its position, so clearly expressed already, of being anxious for an early settlement of all difficulties and a clear outlining of what it may do and may not do.

By reason of the broad and liberal attitude taken by the STEEL CORPORATION in its answer, the answer is made to contain chiefly statements with which the iron and steel trade is already quite familiar. The settlement of the case is thrown directly upon the question of degree. The SHERMAN LAW prohibits monopoly and restraint of trade, and whether under the common law or under the SHERMAN LAW, the settlement has always hinged upon the question of degree. There has lately been the question whether the SUPREME COURT'S decisions of last May did or did not put into the law the idea of "undue" or "unreasonable" or whether they merely wrote these words into the attitude by which the terms used in law should be viewed, but whichever is the case the question is, nevertheless, one of degree. Again, decisions under the law have discussed whether monopoly or restraint of trade, technically proved, was incidental or vital, and the interpretation viewed in this light has also regard to the question of degree. There is no question that to an extent the formation of the prior consolidations and of the UNITED STATES STEEL CORPORATION was in partial restraint of trade and in the direction of monopoly. The question is of the degree to which this was the case. This may have been reasonable or unreasonable, due or undue, incidental or vital. It remains to define these terms in the case of the STEEL CORPORATION and determine which term fits.

Clearing away much of the brush, it can be seen that the case very largely

CONVENTIONS SCHEDULED FOR THE COMING MONTH.

NATIONAL CANNERS' ASSOCIATION.—Rochester, N. Y., week of February 5. Samuel F. Haserot, Haserot Canning Company, Cleveland.

ENGINE & BOAT MANUFACTURERS.—New York (Sixty-ninth Regiment Armory), February 17-24.

CANADIAN MINING INSTITUTE.—Toronto, March 6, 7, 8, 9.

NATIONAL BRICK MANUFACTURERS.—Chicago, March 6-9. T. A. Randall, Indianapolis.

NATIONAL PAVING BRICK MANUFACTURERS.—Chicago, March 4. W. P. Blair, Locomotive Engineering building, Cleveland.

hinges upon the following: (1) The Corporation claims it was formed with full public knowledge and its legality was not seriously attacked until very recently. It was allowed to exist and to round out its organization; it should not therefore be called in question at this late date for things which could and should have been attacked at the time if they were illegal; (2) the Corporation claims that if the separate units in existence in 1900, the year before the Corporation's formation, had been allowed to work out their destiny, no more plants would have been built, nor any more competition instituted, than has been the case.

In these two claims the heavy end of the suit is comprised. It has generally been charged that one of the great reasons the promoters had for forming the STEEL CORPORATION was to forestall a great deal of new construction, which would have led to great competition. Suppose the Corporation should grant this; the fact is that there really has been a great deal of new construction, and much of it—the institution of "independent competition"—can be directly attributed to the existence of the STEEL CORPORATION. The net result, as claimed by the Corporation, is that there has been as much new construction, and the institution of as much competition, as would have occurred had the Corporation not been formed. We believe the Corporation's claim is just, and hold that a careful and intelligent study of the iron and steel trade's development in the UNITED STATES for a period of many years would lead to the conclusion that had the STEEL CORPORATION not been formed the productive capacity of the country to-day would be no greater than it is.

The crux of the suit, then, is: If the formation of the STEEL CORPORATION was wrong, through there being an illegal intent, and this formation was not attacked at the time, should it be attacked now when the expected result does not exist, when on the contrary there is more capacity and more competition than

would have been the case if the formation had not occurred?

The case of the People does not rest here, however; there remains the question of what the Corporation might be able to do in future by way of restraining trade, preventing competition or establishing monopoly. That should be guarded against, but should this be done by the cumbersome and inefficient means which at best the SHERMAN LAW offers in the premises, or by additional legislation looking towards regulation?

The Pig Iron Statistics.

PRODUCTION of pig iron in the UNITED STATES in 1911, as officially reported by the AMERICAN IRON AND STEEL ASSOCIATION, compares as follows with previous years:

1860	821,223
1870	1,665,179
1880	3,835,191
1890	9,702,703
1900	13,780,242
1905	22,992,380
1906	25,307,191
1907	25,781,361
1908	15,936,018
1909	25,795,471
1910	27,303,567
1911	23,649,344

Thus 1911 falls behind 1906, 1907, 1909 and 1910, but is ahead of all other years. Barring the "off" year 1908, 1911 dropped back five years in the calendar. To maintain an increase year by year, 1911 should have followed 1905. Its production should have occurred in 1906 instead of five years later.

The rule of production of pig iron doubling every 10 years in the American iron trade has been mentioned so often that it is interesting to observe how this particular year 1911, falling behind its immediate predecessors, compares with the years separated from it by even decades. The rule, of course, deals only with averages, but interpreting it strictly we should expect 1911 production to be double that of 1901, when it is only 1.5 times that production; four times that of 1891, when it proves to be 2.86 times; eight times that of 1881 when it is only 5.7 times, and 16 times that of 1871, when it is only 14 times. Thus it does not show up so badly after all.

Comparing 1910, the record year, with 1911, the following changes are found to have occurred, the first column showing 1911 production and the second the percentage of decrease from 1910:

PIG IRON	GROSS TONS	PER CENT
Bessemer	9,409,107	16.2
Basic	8,520,029	6.0
Ferro and spiegel	184,717	17.5
All other	5,535,491	18.0
Total	23,649,344	13.3

The decrease in Bessemer pig iron

production was much greater than the decrease in basic, which was to have been expected, for uniformly basic has been gaining on Bessemer. Pig iron outside of Bessemer, basic and manganese iron decreased more than iron as a whole, 18 per cent against 13.0 per cent. This "all other" is practically altogether foundry iron, whether specifically called foundry iron, gray forge or malleable. Thus the steel industry in 1911 appears to have held up better than the foundry industry. The question of stocks, however, must be considered. Stocks of Bessemer and basic iron are never large in proportion to production. The bulk of this iron is made by steel interests and kept molten until used. Sometimes the merchant furnaces have stocks, large as to their own production, but not large in proportion to the total production. Stocks of foundry iron, on the other hand, are very important. Frequently the furnaces carry large stocks, and usually consumers themselves have considerable stocks. The position of 1911 was that stocks at merchant furnaces were greatly reduced during the year, while consumers entered the year with large stocks in some cases, but in all cases closed the year with extremely small stocks. We find that from 1910 to 1911, production of Bessemer, basic and manganese iron decreased 11.2 per cent. If production of "all other" iron had decreased by the same percentage, the 1911 output would have been 1,100,000 tons greater than it really was. Stocks did decrease during 1911, and the stocks at the beginning of 1911 were chiefly stocks which were created in 1910, hence if stocks increased 550,000 tons in 1910 and decreased 550,000 tons in 1911, the actual consumption decreased from 1910 to 1911 by 11.2 per cent, the precise proportion by which production of steel making iron decreased. While there are no comprehensive data as to stocks, there is reason to believe that this is just about what occurred. Hence the foundry trade did not really lose ground in 1911 as compared with the steel trade.

The Bessemer pig iron production in 1911 gives a line on production of Bessemer steel; while the basic iron production gives a suggestion of the tonnage of basic open hearth steel, though by no means a very close one. We estimate production of steel ingots and castings in 1911 as follows:

Bessemer	8,000,000
Basic open hearth	13,750,000
Acid open hearth	1,000,000
Miscellaneous	250,000
Total, 1911	23,000,000
1910	26,094,919
1909	23,955,021
1908	14,023,247
1907	23,362,594

Stanley Accumulates More Nonsense.

AFTER spending the time since last June in public hearings and private investigations, the STANLEY COMMITTEE, ostensibly investigating the STEEL CORPORATION but really trying to make political capital, has before it for its further enlightenment a man who has never been in a steel mill, but who has read a book.

The service which LOUIS D. BRANDEIS rendered his clients, the shippers, in the "advanced rate cases," and the general public as well, was good for the clients and the public but bad for Mr. BRANDEIS. Evidently, his success turned his head. How else can one interpret his appearing before the STANLEY COMMITTEE with testimony gravely asserting that the UNITED STATES STEEL CORPORATION in ten years has made precisely \$650,000,000 more than it ought to have made, and then turning around and passing judgment upon labor conditions in its mills?

Mr. BRANDEIS has done good work, and we are sorry he did not stop. That good work gave him no license to go ahead and attack everything in sight, without adequate knowledge. The fact that a man coins a phrase which is taken up by the public does not warrant that every chance thought that comes into his head is sound and valuable doctrine.

The book which Mr. BRANDEIS read probably contains the truth in the main, but there is no doubt that it paints the truth in very strong colors, and distorts it at points. At best, however, the book purports to show labor conditions in the steel industry in general, whereas the testimony of Mr. BRANDEIS would tend to indicate that labor conditions in the STEEL CORPORATION mills are better than in some other steel mills. The testimony amounts to criticism of the STEEL CORPORATION, when the absolute fact is that the STEEL CORPORATION has led in improving the condition of steel mill labor. The issue is not the steel trade, but the STEEL CORPORATION, or conditions with the STEEL CORPORATION compared with what they would be without the STEEL CORPORATION. No one can possibly follow the developments of the past few years, the wage advances, the attempts to dispense with seven-day labor, the introduction of safety appliances, pensions, accident compensation and other steps towards better conditions, without realizing that throughout it all the STEEL CORPORATION is entitled to credit, not blame.

The BRANDEIS testimony is a disgrace to Mr. BRANDEIS, but it is a greater disgrace to the STANLEY COMMITTEE. This committee pretends to follow the rules in court procedure. It has power to subpoena men and papers, and it has exer-

cised this power lavishly, to the great expense of the STEEL CORPORATION and of individuals. It is a power which is rarely granted by legislative bodies to their committees. When the committee is exercising this power, and pretends to be organized as a court, formally telling its witnesses that the rules of court procedure are followed, it should not violate some of the fundamental rules of evidence as it has repeatedly done in the most flagrant manner.

In court, testimony must either be that of actual witnesses to the event, or that of a qualified expert. In which of these divisions is MR. BRANDEIS? He has not been in a steel mill, but he has read a book. His testimony is not even hearsay.

If MR. BRANDEIS, however, appears as an expert, when he says the STEEL CORPORATION has made \$650,000,000 more than it ought, in what school of iron and steel market statistics has he qualified? Does he know what is a reasonable market spread between billets and wire rods, between basic pig iron and heavy melting steel, between black and galvanized sheets? The STANLEY COMMITTEE has disgraced itself even more in this BRANDEIS testimony than in any of the vagaries it had developed before.

Twenty Years Ago.

OUR issue of February 5, 1892, an even 20 years ago, contained the first part of a series of articles on tin plate manufacture, prepared by JOSEPH PHILLIPS. The first installment, occupying one page, started with a description of the heating furnace for the blooms and carried the steel through the tin bar mill, the tin mill furnaces and the hot rolls.

The writer disposes of some suggestions which it appears were rather fresh at that time. One suggestion was to roll the bars directly down to 30 gauge, without stopping at the tin bar and then reheating, doubling, etc. Another was that of SIR HENRY BESSEMER, to run the steel direct from the ladle into sheets. Evidently SIR HENRY did not know everything about steel, even though he did invent a great process. MR. PHILLIPS dismissed these suggestions in a very practical way, by saying he had never known a man acquainted with the difficulty of delivering to the pickle a perfectly clean sheet free from surface imperfections, who advocated any such methods. Twenty years later we are making tin plate just about the way MR. PHILLIPS described, but we have much heavier machinery. MR. PHILLIPS, however, was a trifle ahead of his time. He advocated a hot mill roll not less than 22 inches in diameter, admitting that a great many would object, preferring a smaller diameter roll.

MARKET CONDITIONS IN PIG IRON

THE LOCAL MARKET.

Foundry Iron Prices Harden—Little Inquiry Pending.

PITTSBURGH. — Prices in foundry and forge grades of pig iron have hardened appreciably with the first three days of the month. In steel-making irons, the market continues unsettled, with few inquiries pending, buyers apparently being satisfied to let the situation work itself out. Low prices made last week on heavy purchases of Bessemer and basic irons have not been duplicated on small spot tonnages, and to the average buyer the minimum on Bessemer continues \$14.25 Valley furnace, with basic quoted \$12.40 to \$12.50 and \$12.60 at furnace.

Several sales of basic, less than 500 tons in each case, have been put through at \$12.40 Valley furnace. An Eastern mill paid \$12.60 Valleys on 1,000 tons of basic for forward delivery, deliveries to begin during February. Malleable is quoted up to \$13; forge at \$12.60 to \$12.75 furnace.

Quotations have gone in on the Westinghouse inquiry for foundry iron for second half, but prices asked are considerably higher than those quoted for first half iron, and it is doubtful if the inquiry will be closed at this time.

Small-Lot Buying in East.

NEW YORK. — The fact that buying in the iron trade has been pretty much from hand to mouth was demonstrated during the week by the numerous calls received for hurry shipments, as consumers do not seem to be satisfied that they have enough material on hand to keep them running. Business throughout the trade has shown a better tone by the increased number of inquiries. It is believed the general buying movement for large amounts is about over, until the requirements for the second quarter begin to develop. Prices have assumed a firmer tone. There are reported to have been some sales of No. 2X foundry at Philadelphia at \$15, and it is believed that if anyone really wanted a substantial quantity that considerably better than \$15 could be done. In some quarters of the New York market it is said that owing to the tariff agitation in Washington, and with the possibility of prices

PRINCIPAL PIG IRON

ORDERS OF THE WEEK.

Pittsburgh.
Tons.
1,000 BASIC for shipment to mill East of Pittsburgh, \$12.60, Valley furnace; delivery February-March.
1,200 BASIC, prompt, to local buyers in three sales, \$12.40, Valley furnace.
1,000 MALLEABLE, \$13, Valleys.

Philadelphia.
1,000 EASTERN BASIC to New Jersey steel mill, forward shipment, taken from a Lehigh Valley furnace, \$14.50, delivered tidewater; same company which took Valley basic tonnage from Pittsburgh maker.
5,000 BASIC sold by Lehigh Valley furnace to Harrisburg (Pa.) consumer, \$14.25, delivered.
3,000 Nos. 4 and forge, to a Lynchburg (Va.) pipe maker, from Virginia furnace; prompt shipment.
2,000 BASIC sold by Bethlehem Steel Company to nearby consumer, first quarter, shade under \$14.25, delivered.
1,000 VIRGINIA No. 2X, second quarter, to tidewater consumer, \$12.25, furnace.

New York.
2,500 NORTHERN No. 2X to New York State stove interest, March-September shipment; iron from Eastern Pennsylvania furnace.

Cincinnati.
4,000 NORTHERN FOUNDRY iron to La Porte (Ind) implement concern, first half, taken by Cleveland producer; basis shade under \$13.25 Valley furnace.

Birmingham.
36,000 PIPE IRONS, sold by Sloss-Sheffield to U. S. Cast Iron Pipe & Foundry Company, February-April delivery, basis \$10.25, Birmingham, for No. 2.

being reduced, buyers are not anxious to close for future requirements at the present prices. This is one of the reasons assigned to the fact that buying from hand to mouth has been so prevalent recently.

Heavier Pipe Inquiries.

PHILADELPHIA. — A Virginia pipe concern is in the market for 10,000 tons for second quarter, covering No. 3 and No. 4 foundry and forge grades, Birmingham reports say that inquiries from all sections have been numerous.

South Expects February Buying.

BIRMINGHAM. — The final week of January did not turn out as badly as it was expected in pig iron, in the South, and there is hope that the buying will be pronounced through February. Inquiries have been coming in as to

iron for delivery during the last half of the year. Producers are not looking for business yet for second half delivery and are quoting \$10.25@10.50 for No. 2 for the second quarter. Sloss-Sheffield is said to have booked one order for a block of 26,000 tons for delivery during first half. Sloss-Sheffield will blow in a furnace toward the end of the week. Consumers who sought pig iron recently at \$10 per ton, failed to connect.

THE COKE MARKET.

Operators Find It Impossible to Sustain High Rate of Production.

CONNELLSVILLE. — Adverse weather conditions, the labor shortage—which has become acute in some sections of the region—and the bad condition of old mines and coking plants long idle which it is desired to start, have made it impossible to keep up the rate of output established during the week ending January 20. Prompt coke is in strong demand, and some additional capacity could be utilized. Production in the region fell off 6,500 tons during the week ending January 27, compared with the previous week. The "Courier's" weekly comparisons are as follows:

COKE PRODUCED BY—	WEEK ENDING.	
	Jan. 20	Jan. 27
Furnace interests (tons)	258,127	255,076
Merchant ovens (tons)	149,058	145,521

Total output (tons)	407,185	400,597
Active ovens	30,424	30,349
Shipments (cars)	11,271	11,271

Of the present conditions, the "Courier" says:

With the exceptions noted, manufacturing conditions are excellent. Cars are abundant and the coke movement is regular. The yards are pretty clean and there is very little spot coke on the market.

Market Active and Firm.

PITTSBURGH. — The predicted decline in coke has not occurred. Prompt furnace coke still is in active demand, and spot lots of standard brands are eagerly snatched up. Sales have been made of spot furnace coke at \$1.85 since the opening of the week, though the demand price is \$1.90 and \$1.95. One lot of 1,000 tons brought \$1.90. Under present conditions \$1.90 about represents the market. Two contracts for furnace coke, February to June inclusive, aggregating 15,000 tons per month, were closed in the final days of January at \$1.85, and the buyers considered they drove a good bargain. Prompt foundry coke commands \$2.10 and upward, although the firming up of foundry coke prices is more in sympathy with the furnace coke demand than because of any extra call from foundry buyers.

CRUDE AND FINISHED STEEL PRODUCT

CRUDE STEEL OUTPUT.

A Remarkable Increase in All Western Plants.

PITTSBURGH. — Crude steel output has been heavily increased at all points in Pittsburgh, Ohio and Chicago districts.

The plants of the Carnegie Steel Company at South Sharon, Pa., and Columbus, O., were both in operation at the close of the week on billets and bars. The open hearth steel department at the Aliquippa plant of the Jones & Laughlin Steel Company will be giving practically full output by the end of the coming week. Gary has increased its operating capacity. There is some shortage in the supply of prompt billets. Wire rods are also difficult to secure for spot shipment. Specifications for plates and structural material for February delivery have been very heavy.

Pending Structural Inquiries.

NEW YORK.—United Electric Light & Power Company, of New York is inquiring for 14,000 tons for a new power house in Two Hundred and First street, and will receive proposals until February. Virginia Bridge & Iron Company will furnish the steel for the Halston Bank building at Knoxville, Tenn. The West is in the market for a total of about 10,000 tons of structural material, which will be placed within a few days. January shows total bookings of structural steel in excess of 110,000 tons.

Thus far the American Bridge Company has taken on 45,000 tons for subway work. Delaware & Hudson has ordered 5,000 tons from the American Bridge Company, which also has booked 6,500 from the Grand Trunk subsidiary, the Southern New England.

Local Structural Awards.

PITTSBURGH. — McClintic-Marshall Construction Company has taken 750 tons for a power house at Cuyahoga Falls, Ohio; 300 tons for a warehouse at Fairmont, W. Va.; 522 tons for a sugar factory at Angola, La. Fort Pitt Bridge Works has been awarded 700 tons for addition to Carnegie Technical Schools, Pittsburgh. The Manufacturers' Club of Philadelphia is inquiring for 2,000 tons for its new building, and specifications are out for the Bellevue-Stratford Hotel addition at Philadelphia.

Locomotive engineers are endeavoring to standardize wage scales east of Chicago.

STEEL FOR HELL GATE.

McClintic-Marshall Place Order for Rolling with Carnegie Mills.

NEW YORK.—Carnegie Steel Company will roll the 40,000 tons of structural steel to be required for the approaches to the connecting railroad span over Hell Gate, the contract for which was taken by the McClintic-Marshall Company. McClintic-Marshall interests heretofore have been taking their plain material from an independent steel company in Pittsburgh.

Plates and shapes for two steamships to be built for the Pittsburgh Steamship Company will be furnished by the Carnegie Steel Company.

Rail orders officially announced during the week, which have been previously recorded, are: Pennsylvania's 150,000-ton order, Steel Corporation 66,000 tons, Pennsylvania Steel Company 33,000, Lackawanna Steel Company 12,000, Cambria 32,000, and Bethlehem Steel Company 7,000 tons; Grand Trunk order of 10,000 tons goes 7,500 to Chicago and 2,500 to Buffalo. The Harriman lines have not yet indicated their probable requirements and are not expected to do so the coming month, the Harriman order in 1911 not having been placed until April.

Pipe Prices Unchanged.

PITTSBURGH. — Contrary to the reports that the pipe prices were to be boosted shortly after the first of the year, prices have remained the same as during the latter part of last December, and there is little chance that prices will go higher for the present. Some of the consumers who have been credited with hanging back on their inquiries have quietly placed the business recently.

Prices of bolts, nuts and rivets are more firm than they have been for several months. Rivets at \$1.50 for structural and \$1.55 for boiler are holding, no concessions being heard, which was not the case 10 days ago.

Eastern Steel Company.

The Eastern Steel Company, of Pottsville, is offering \$3,000,000 bonds in the sum of \$1,000 each. These bonds, it is understood, are a direct obligation of the Eastern Steel Company, and an absolute first mortgage on all the property now owned and hereafter to be acquired by the company.

Pennsylvania Railroad had 189 fires in 1911, with loss of \$190,000.

Range of Weekly Quotations of Pig Iron

PIG IRON

	Feb. 3.	Jan. 27.	Jan. 20.	Jan. 13.	1912. Jan. 6.	1911. Dec. 30	Dec. 23.
At Pittsburgh—							
Bessemer	14.90@15.15	14.90@15.15	15.15	15.15	15.15	15.15	15.15
Basic	13.15@13.60	13.35@13.40	13.40@13.65	13.35@13.40	13.40	13.40	13.40
No. 1 Foundry	14.90	14.90	14.90	14.90	14.90	14.50	14.50
No. 2 Foundry	13.90@14.40	13.90@14.40	13.90@14.40	13.90@14.40	13.90@14.15	13.90@14.15	13.90@14.15
Malleable	13.90	13.90	13.65@13.90	13.65@13.90	13.65	13.65	13.65
Gray Forge	13.40@13.65	13.40@13.65	13.40@13.65	13.40@13.65	13.40@13.65	13.40@13.65	13.40@13.65
Low Phosphorus	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00
Ferro Silicon, 50 per cent.	68.00@70.00	68.00@70.00	70.00	70.00@71.00	70.00	70.00	70.00
Ferro Silicon, 10 per cent.	21.90@22.40	22.40@22.90	22.40@22.90	22.90	22.90@23.90	22.90@23.90	22.90@23.90
Silicon Spiegel, 10 to 12 per cent.	22.40@23.90	23.40@24.90	23.40@24.90	24.40	24.40	24.40	24.40
Spiegelisen	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50
Ferro Manganese	42.45@42.95	42.70@42.95	42.70@42.95	42.95	41.95	41.95	40.45
At Virginia Furnaces—							
Basic	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. 1 X	13.00	13.00	13.00	13.00	13.00	12.75	12.75
No. 2 X	12.00@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25	12.25
No. 2 Plain	12.00@12.50	12.00@12.50	12.00@12.50	12.00@12.50	12.00@12.50	12.00@12.25	12.00@12.25
Gray Forge	12.00	12.00	12.00	12.00	12.00	12.00	12.00
At Birmingham—							
No. 1 Foundry	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00
No. 2 Soft	10.25	10.00@10.25	10.00@10.50	10.00@10.50	10.25@10.50	10.00@10.50	10.00@10.25
No. 2 Foundry	10.25	10.00@10.25	10.00@10.50	10.00@10.50	10.25@10.50	10.00@10.50	10.00@10.25
No. 3 Foundry	9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75
No. 4 Foundry	9.50	9.50	9.50	9.50	9.50	9.50	9.50
Gray Forge	9.25@9.50	9.25@9.50	9.25@9.50	9.25@9.50	9.25@9.50	9.50	9.50
At Philadelphia—							
No. 2X Foundry	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25
Basic	14.25@14.50	14.50	14.50	14.50	14.50	14.50	14.50
Gray Forge	14.25	14.25@14.50	14.25@14.50	14.25@14.50	14.25@14.50	14.25@14.50	14.25@14.50

STEEL.

Tons of 2240 lbs. at Pittsburgh—							
Bessemer Billets	20.00	20.00	20.00	20.00	20.00	20.00	19.00@19.50
Open Hearth Billets	20.00	20.00	20.00	20.00	20.00	20.00	19.00@19.50
Forging Billets	27.00@28.00	27.00@28.00	27.00@28.00	26.00@28.00	26.00@28.00	26.00	25.00
Sheet and Tin Bars	21.00	21.00	21.00	21.00	21.00	21.00	20.00@21.00
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	25.00	25.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
16 and 20 lbs.	25.00	25.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
12 and 14 lbs.	26.00	26.00	28.00	28.00	28.00	28.00	28.00
Bessemer Wire Rods	25.00	24.50@25.00	24.50@25.00	24.00@25.00	24.50@25.00	24.50@25.00	25.00
Open Hearth Wire Rods	25.00@25.50	24.50@25.00	24.50@25.00	24.00@25.00	25.00	25.00	25.00
Muck Bar, all pig iron	28.00	28.00	28.00@28.50	28.00@29.00	28.00@29.00	28.00@29.00	28.00@28.50

FINISHED PRODUCTS.

Tons of 2000 lbs. at Pittsburgh—							
Sklap Steel Grooved	23.50@24.00	23.50@24.00	23.50@24.00	23.50@24.00	23.50@24.00	23.50@24.00	23.50@24.00
Sklap Steel Sheared	24.00@24.50	24.00@24.50	24.00@24.50	24.00@24.50	24.00@24.50	24.00@24.50	24.00@24.50
Railroad Spikes	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Sheets, No. 28	37.00@40.00	38.00@40.00	38.00@40.00	38.00@40.00	38.00@40.00	38.00	38.00
Galvanized Sheets, No. 28	57.00@60.00	58.00@60.00	58.00@60.00	58.00@60.00	58.00@60.00	58.00	58.00
Beams, 3 to 15 inches	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
Beams, over 15 inches	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00
Channels, 3 to 15 inches	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
Channels, over 15 inches	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00
Tees, 3-inch and larger	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
Zees, 3-inch and larger	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00
Angles, 3 to 6 inches	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
Angles, over 6 inches	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
Tank Plate	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00
Boiler Plate	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00
Hoops	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
Fenders	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00
Bessemer Steel Bars	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00	23.00	23.00
Open Hearth Steel Bars	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00	23.00	23.00
Common Iron Bars	25.50@26.00	25.50@26.00	25.50@26.00	26.00	25.00	25.00	25.00

[illegible]

Detail Prices on Finished Product in Iron and Steel.

STEEL PLATES.

Base prices, tank quality, ¼-inch thick, per 100 lbs., f. o. b. Pittsburgh:

9½ to 100 inches wide	\$1.25	\$1.30
Extras over base price—		
3/16-inch thick	.10	
Gauges 7 and 8	.15	
Gauge 9	.25	
Gauges 10 and 11	.25	
Circles	.20	
Sketches	.10	
Boiler and flange quality	.10	
Marine steel	.40	
Widths over 100, to 110 in.	.05	
Widths over 110, to 115 in.	.10	
Widths over 115, to 120 in.	.15	
Widths over 120, to 125 in.	.25	
Widths over 125, to 130 in.	.50	
Widths over 130 in.	1.00	

IRON AND STEEL SCRAP.

Old steel rails, re-rolling.	\$12.50	\$13.00
Old steel rails, re-melting.	12.50	13.00
Steel axles.	16.00	16.50
Heavy melting scrap.	12.50	12.75
Low phosphorus.	15.00	15.50
Sheet scrap.	10.75	11.00
No. 1 wrought scrap.	13.00	13.75
Machine shop turnings.	9.25	9.75
Cast borings.	9.25	9.75
No. 1 cast.	12.25	12.50
Old car wheels.	12.75	13.00
Old iron rails.	15.00	15.25
Railway Malleable.	12.00	12.25
Iron car axles.	21.50	22.50

TIN AND TERNE PLATES.

Open market, f. o. b., Pittsburgh—

Coke tins:		
14x20, 100 lbs.	\$3.40	
14x20, 95 lbs.	3.35	
14x20, 90 lbs.	3.35	
Charcoal tins:		
A grade, 14x20, I. C.	4.40	
A grade, 14x20, 100 lbs.	4.25	
Ternes:		
20x28, I. C.	6.60	
20x28, 200 lbs.	6.30	

STEEL RAILS.

Fifty pounds and heavier—

500-ton lots and over.	\$28.00	
Car load lots.	30.00	
Less than car load lots.	32.00	
Light rails—		
12 pounds.	26.00	
16, 20 and 25 pounds.	25.00	
30 and 35 pounds.	25.00	
40 and 45 pounds.	25.00	
Relaying rails—		
Subject to inspection, f. o. b., Pittsburgh:		
Standard 50 lbs. & heavier.	\$22.00	\$23.00
25 to 40 lbs.	22.00	22.50
16 to 20-pound rails.	22.00	22.50

STEEL SHEETS.

Open market, per 100 lbs., f. o. b. Pittsburgh—

Gauge.	Black	Galv.
30	\$2.05	\$3.25
29	1.95	3.00
28	1.90	2.90
27	1.85	2.75
25-26	1.80	2.60
22-24	1.75	2.40
17-21	1.70	2.30
15-16	1.65	1.95
13-14	1.60	1.95
Blue Annealed.		
10 and heavier	\$1.40	\$1.45
11-12	1.45	1.50
13-14	1.50	1.55
15-16	1.60	1.65
Corrugated Roofing.		
Per square, 28 gauge, f. o. b., Pittsburgh.		
Painted	\$1.35	
Galvanized	2.50	\$2.55

WIRE AND NAILS.

Prices to jobbers in car load lots, per 100 lbs., retailers 5 cents additional:

Wire nails	\$1.40
Plain wire	1.40
Painted barbed wire	1.60
Galvanized wire	1.90

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per cent pure are held at 24c per pound in ton lots.

For small lots of 100 pounds and over advances of 3c per pound are charged.

Rods and wire	base price 31 cents
Sheets	base price 33 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton
Mine-run	\$15@1.25
¾-inch	1.25@1.35
1¼-inch lump	1.35@1.45
Slack	.65@.75
Ohio	
At Cleveland—	Pgh. No. 8
Mine-run	\$2.13 \$1.95
¾-inch	2.23 2.05
1¼-inch lump	2.33 2.15
Slack	1.63 1.40
Free-	
At Buffalo—	Pgh. port.
Mine-run	\$2.40 \$2.10
¾-inch	2.50 2.20
1¼-inch lump	2.60 2.30
Slack	1.90 1.60
Ohio	
At Detroit—	Pgh. No. 8
Mine-run	\$2.55 \$2.25
¾-inch	2.65 2.35
1¼-inch nut	2.75 2.45
Slack	2.05 1.60
Ohio	
At Chicago—	Pgh. No. 8
Mine-run	\$3.05 \$2.75
¾-inch	3.15 2.85
1¼-inch nut	3.25 2.95
Slack	2.55 2.20

MERCHANT PIPE.

Base discounts, car load lots, subject to the usual variation of 5 per cent:

	Black	Galvanized
	Butt. Lap.	Butt. Lap.
¾, 1¼ inch	73	53
¾ inch	74	64
1½ inch	77	67
¾ to 1½ inch	80	72
2 inch	81	77
2½ to 3 inch	81	79
4½ to 6 inch	78	79
7 to 12 inch	76	66
Extra strong plain ends—		
¾ to ¾ inch	70	60
¾ inch	75	69
¾ to 1½ inch	79	73
2 inch	80	76
2½ to 4 inches	78	72
4½ to 6 inches	77	71
7 to 8 inches	70	60
9 to 12 inches	65	55

The above steel pipe discounts are for "card weight." Less than carloads to destinations east of the Mississippi, two points lower.

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe car load prices to consumers; prices to jobbers one point and 5 per cent.

	Black	Galv.
	Butt.	Lap.
¾, 1¼ inch	68	48
¾ inch	68	58
1½ inch	71	61
¾ to 1½ inch	75	67
2 and 2½ inch	76	69
2 inch	71	63
2½ to 4 inch	74	67
4½ to 6 inch	73	65
7 to 12 inch	71	61
Extra Strong Plain Ends.		
	Butt.	Lap.
¾, 1¼, ¾ inch	65	55
¾ inch	70	64
¾ to 1½ inch	74	68
2 and 2½ inch	75	69
2 inch	71	63
2½ to 4 inch	73	67
4½ to 6 inch	72	66
7 to 8 inch	65	55
9 to 12 inch	60	50
Double Extra Strong Plain Ends.		
	Butt.	Lap.
¾ inch	60	54
¾ to 1½ inch	63	57
2 and 2½ inch	65	59
2 inch	61	55
2½ to 4 inch	63	57
4½ to 6 inch	62	56
7 and 8 inch	55	45

MERCHANT STEEL.

Cold rolled and ground shafting, 55 per cent off, car load lots; 50 per cent off less than car load lots; delivered in base territory:

Planished tire steel	\$1.30@1.40
Iron finish, up to 1½x½ in.	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe calk steel	1.70@1.80
Railway spring steel	1.70@1.80
Cutter shoe	1.95@2.05
Flat sleigh shoe	1.55@1.65
Crucible tool steel	7.00@8.00
Open hearth spring steel	2.05@2.30

Freight Rates on Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig iron, from Virginia furnaces to	Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	\$2.50	\$2.35	\$3.60	\$3.20	\$2.35	\$3.30	\$3.35
Bristol	4.35		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.90	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat	2.90	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows	2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig iron from Birmingham, Ala., tons of 2,240 lbs., to—

Boston, by water	\$4.60
Chicago	4.35
Cincinnati and Ohio river	3.25
Cleveland	4.35
Milwaukee and Northwest	4.75
New York, all rail	5.95
New York, rail and water	4.25
Philadelphia, all rail	5.00
Philadelphia, rail and water	4.00
Pittsburgh	4.90
St. Louis	3.75
To Pittsburgh from—	
Dunbar furnaces	.85
Kittanning furnaces	.60
Scottdale furnaces	.85
Valley furnaces	.90
Wheeling	.90
Valley furnaces to—	
Cleveland	.90

Cleveland	1.65
Columbus	1.65
Cincinnati	2.10
Chicago	2.50
East St. Louis	2.80
Hamilton, Ont.	2.20
Joliet	2.65
Louisville	2.65
New York	2.85
Pittsburgh	.75 .80
Philadelphia	2.15
Richmond, Va.	2.95
Toledo	1.95 2.25
Valley furnaces	1.35
Milwaukee	2.55 2.75
Detroit	2.10 2.25

TIN PLATE.

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	\$2.15	\$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va.	.90	1.00
Youngstown	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango valleys...	1.00	
Wheeling	1.00	

Per 100 lbs., Pittsburgh to—	C.L.	L.C.L.
Boston, Mass.	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water.	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Colo.	84	1.18
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kan.	54½	68
Trenton, N. J.	16	19

COKE.

From Connellsville region, per pounds, to—	Fur.	Fdry.
Buffalo	\$1.65	\$1.90
Baltimore	2.15	

FINISHED PRODUCTS.

Finished steel products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany	.16
Buffalo	.11
Boston	.18
Baltimore	.14½
Canadaigua	.13½
Cleveland	.10
Columbus	.13
Cincinnati	.15
Chicago	.18
Harrisburg	.14½
Louisville	.18
New York	.16
Norfolk	.20
Philadelphia	.15
Rochester	.11½
Richmond	.20
Scranton	.15
St. Louis	.23
Washington	.14½
To Pittsburgh from—	
Mahoning and Shenango valleys..	.05
Wheeling	.05

COAL.

Coal rates from mines—	
To Ashtabula	\$1.00
To Allegheny, Pan Handle Ft.	
Wayne tracks	.43
To Allegheny, West Penn tracks ..	.48
To Allegheny, B. & O.	.35
To Pittsburgh, P. R. R. Main Line.	.40
To Pittsburgh, B. & A. V. Div.	.48
To Pittsburgh, B. & O.	.33
To Valleys	.70
To Buffalo	1.25
To Cleveland	1.00
To Detroit	1.40
To Chicago	1.90
To New York, gross ton	2.25
To Philadelphia, gross ton	2.00
From Freeport—	
To Buffalo	1.10
For Lake shipments— Cargo. Fuel.	
To Ashtabula	.88 .98
To Cleveland	.88 .98
To Erie	.88 .98
West Virginia rates from mines—	
To Chicago	1.90
To seaboard points, gross ton	1.80
From No. 8, f Ohio—	
To Cleveland	.98
To Chicago	1.65
To Detroit	1.15

NEW CONSTRUCTION AND EXTENSIONS

Machinery and Tool.

Cleveland, O. — Alexander Winton, of Winton Motor Car Company, is head of newly incorporated Winton Gas Engine & Manufacturing Company (see Ohio incorporations, this issue). Company will build plant at West One Hundred and Sixth street, Cleveland, for manufacture of a newly-designed, powerful gas engine for marine and stationary purposes. Company is capitalized at \$200,000. Engine, on which Mr. Winton holds patents, will be of six-cylinder type, from 200 to 400 horsepower. The main structure of new plant will be of brick and steel, one-story in height, 300 x 80. Directors of company are Alexander Winton, James Winton, Labelle Winton and Sterling Parks, W. S. McKinstry is secretary and treasurer.

Seattle, Wash. — Clyde Iron Works, of Duluth, large manufacturer of heavy machinery, has decided to enter the Pacific Northwest and to make this city headquarters. C. A. Luster, president of the company, announces decision of company to establish branch plant here. Company makes heavy machinery for logging, lumbering and mining operations.

Cleveland, O. — The Moore Engineering Company, New England building, will soon take bids on the erection of a fireproof factory and office building, to cost \$30,000, for the Ohio Blower Company. The factory building will be 60x140 feet, and the office building 70x70 feet.

Stoneboro, Pa. — F. A. Steck and G. E. Portzman, officers of the American Railway Appliance Company, visited here last week to inspect available sites for a plant the company hopes to establish early in the spring.

St. Louis, Mo. — Ground will be broken the coming week for new plant of Busch-Sulzer Brothers-Diesel Engine Company on site at Second and Utah streets; plant to cost \$500,000.

Williamsport, Pa. — James H. Link, president of the Link Machinery Company, whose plant was destroyed by fire January 20, announces company will build at once.

Cincinnati, O. — Ebersole Piano Company, manufacturers, owned by Joseph G. Ebersole and the members of his family, has been bought by the Butler Brothers Piano Manufacturing Company, West McMicken avenue.

Iron and Steel.

Youngstown, O. — Youngstown Sheet & Tube Company has decided on part of finishing mill capacity in connection with open hearth steel department now building at East Youngstown plant. Small plate mill and 8- and 10-inch hoop mills probably will be installed. Work on foundations for open hearth furnaces at new addition delayed on account of cold. Contractors will begin work on concrete pile contract the coming week.

Youngstown, O. — Concrete Steel Company, of New York, has signed a lease for building in Crab Creek, formerly occupied by the Reliance Edge Tool Company, the property being owned by Empire Iron & Steel Company. Reliance Edge Tool Company vacated it several years ago. Building will be occupied by Concrete Steel Company as soon as remodeling is completed. Concrete Steel Company manufactures reinforced steel and similar products.

St. Louis, Mo. — Kansas City scrap concern, with melting cupola and facilities for handling foundry supplies (name of company withheld), has closed deal for factory property on Terminal railway, 100x300, building three stories.

Pittsburgh. — Automatic Sprinkler Company of America, 123 William street, New York city, contemplates erection of large plant either at Akron, O., or Pittsburgh. Plans in hands of Dodge, Day & Zimmerman, Drexel building, Philadelphia; full details will be decided after location has been settled, which will be within a month. Sites under option in both cities.

Clearfield, Pa. — Property of Clearfield Steel & Iron Company at Hyde City, was sold at sheriff's sale to W. A. Collins, Esq., of Pittsburgh, representing the bondholders. The price at which knocked down was \$12,600. The sale was on the mortgage covering the bonds. Buyers' plans have not been announced.

Nashville, Tenn. — William J. Miles, Jr., Middletown, Ohio, who was recently in Nashville investigating possibilities for the location of a plant to manufacture malleable iron and steel castings, announced January 30, to the local industrial bureau that he had decided upon building the factory here. Associated with him will be Mr. Rennick, cashier of the Middletown bank. Plant to cost about \$200,000.

Edwardsville, Ill. — Manager A. J. Leischman, of Edwardsville plant of United States Radiator Corporation, an-

nounces plans have been adopted for additions and power extensions to Edwardsville plant. No details announced; plans under way.

New Castle, Pa. — Stockholders of the New Castle Forge & Bolt Company voted January 24 to authorize the board of directors to appoint a committee that shall have power to sell plant at the best price obtainable. An effort will be made to dispose of the plant at private sale. It is now being partially operated. The directors are: Charles J. Kirk, E. W. Beadle, T. F. Morehead, R. C. Patterson, G. L. Patterson, W. H. Cox and J. Norman Martin.

Greensburg, Pa. — Transfer has been completed of plant of the defunct Brown-Ketcham Company, at Greensburg, to the Noelke-Richards Company, of Indianapolis. In addition to the Greensburg plant, another works of the Brown-Ketcham Company, at Haughville, Ind., will also be transferred to the Indianapolis concern. Greensburg works, which have been idle since the failure of the Brown-Ketcham Company, will resume operations within a month or so. It is planned to enlarge the Greensburg plant.

Birmingham, Ala. — J. J. Bucks, chief engineer of the Barret Manufacturing Company, and W. W. Foreman, of the same company, announced during visit here last week that the company will build the plant to take care of the by-products contracted for from the Tennessee Coal, Iron & Railroad Company. Work will start on new plant in a short time.

Pottsville, Pa. — Eastern Steel Company announces bond issue to finance extensions in contemplation.

Bridge and Structural.

Pittsburgh. — Farris Bridge Company, Jenkins Arcade building, Pittsburgh, took contract for reinforced concrete bridge over Meadow Run, at Davistown, Greene county, Pa., for Greene county commissioners.

Johnstown, Pa. — Engineer C. P. Thomas, Suppes building, is preparing plans and estimates for a 30 foot span bridge, 32 feet wide, built of I-beams and reinforced concrete for the Cambria County Commissioners.

Lorain, O. — A steel bridge having a span of 170 feet will be built for the Board of County Commissioners from plans submitted by T. L. Gidson, Elyria. The structure will cost \$70,000.

Cincinnati, O. — Architect C. W. Drach, Union Trust building, has plans for the new hotel building, to be erected for the Gibson House Company. The building will be a nine and 12-story structure, built of brick, terra cotta and

steel and will cost about \$1,250,000. The nine-story portion will be built first, bids for which will be asked about March 1.

Memphis, Tenn.—Actual construction work will start on bridge of Rock Island System across Mississippi river at this point as soon as Congress passes bill authorizing structure. J. B. Berry, chief engineer Rock Island System, Chicago, announces plans for bridge are practically completed, but specifications are not yet out for bidding.

Foundry and Machine.

Steelton, Pa.—New foundry being erected by Pennsylvania Steel Company will be completed and ready for occupancy March 1.

Troy, O.—The Troy Foundry Company will build a one story concrete foundry building, 80x128 feet, from private plans. The work will mature about February 27.

Bridgeburg, N. Y.—Tuttle-Bailey Manufacturing Company, makers of ferro-steel registers, purchased five acres of land in the south ward and will erect five buildings in the spring, offices, foundry, warehouse, japannery and shipping room; total cost \$15,000.

Canton, O.—Canton Foundry & Machine Company, Eighth and Saxton streets, has adopted plans for improvements and general enlargement of its machine shop. Building will be brick, 150x60; traveling crane will be installed. William Cavanaugh, secretary and treasurer.

Hardware, Sheet Metal, Etc.

Bellaire, O.—Enterprise Enameling Company, at annual meeting decided to build addition to dipping department. Plans under way. William Lipphardt, general manager.

Oak Harbor, O.—The Gypsum Canning Company, Port Clinton, O., intends building a canning factory of either cement block and steel or frame construction.

Sebring, O.—Strong Manufacturing Company has broken ground for new enameled ware plant at this place.

Moundsville, W. Va.—The Stewart Chemical Company, of Moundsville, has been taken over by the Ohio Valley Enamel & Stamping Company of Bellaire, O. Company has secured property adjoining plant and on the new site they will erect a large building which will be operated under the name of the United States Enamel Company. Ohio Valley company is a Delaware corporation, with main offices at Bellaire.

East St. Louis, Ill.—Le Sieur Vacuum

Milk Can Manufacturing Company, East St. Louis, has purchased a tract north of East St. Louis and will erect factory in the spring. Temporary arrangements will be made to manufacture the cans. St. V. Le Sieur, president. The can is made on the same principle as the thermos bottle. The company claims it will keep milk at the same temperature for 24 hours. Theodore Soellinger, an East St. Louis city councilman, is vice president of the company, and C. A. Summers, also a councilman, secretary and treasurer.

Warehouses, Business Bldgs.

Youngstown, O.—Republic Iron & Steel Company is having plans prepared

MANUFACTURING PURPOSES

The Sweeney Industrial Properties are located in the heart of the Niagara frontier, on the city of North Tonawanda, 20 minutes' run from Buffalo and Niagara Falls. We are at the foot of Lake navigation, and at the point where the 1,000-ton barge canal enters into the Niagara river, thus giving us water communication with New York City and the East, and Chicago and the West. We have some 20 different railroad connections, Niagara Falls Electric power, natural gas, and are an up-to-date city of 25,000 people, and in close touch with Buffalo and other places, from which to draw labor. Floor space and manufacturing plants for rent. Will build for desirable tenants on long-time lease. New cement block factory, 70x300. All improvements. Railroad siding, two blocks from freight and express. Offices for rent from May 1, next. We solicit correspondence from manufacturers who are located in close, cramped quarters in cities, and ask them to look over our proposition, with a view of locating where conditions are very attractive.

Write
JAMES SWEENEY, JR.,
Agent Sweeney Industrial Properties,
North Tonawanda, N. Y.

STRONG
DURABLE

THE STANDARD SCALE & SUPPLY

COMPANY

Manufacturers of

WEIGHING AND MIXING

MACHINERY

"The Standard" Scales—Eclipse. Concrete Mixers

Headquarters and General Offices, PITTSBURGH, PA.
Manufacturing Plant at BEAVER FALLS, PA.

PITTSBURGH 243-245 Water St.	CHICAGO 1345-47 Wabash Ave.	NEW YORK 136 W. Broadway
CLEVELAND 1547 Columbus Road	PHILADELPHIA 35 S. Fourth St.	

RELIABLE
SIMPLE

The Connellsville Manufacturing & Mine Supply Co., INC.

CONNELLVILLE, PENN'A.

MANUFACTURERS OF

Pumping and Hoisting Machinery, Mine Fans, Air Compressors, Etc.

COMPLETE EQUIPMENTS

For Coal and Coke Works.

for warehouse at the Brown-Bonnell plant. Improvement will replace old warehouse on the property.

St. Louis.—Joseph A. and A. A. Rossier have bought site, 70x73 feet on Market street, for hotel building; construction to begin in six months. Hotel will be 10 stories, fireproof, to cost \$150,000. Daugherty Brothers, realty agents, represent the proprietors.

Toledo, O.—The C., H. & D. Elevator Company has awarded the contract to the Ellis Dryer Company, Chicago, for the erection of a dryer house 30x34 feet, 60 feet high, built of steel and concrete.

St. Louis, Mo.—A local syndicate, organized by W. J. Holbrook, will erect an 18-story hotel at Eighth and Olive streets.

Power, Hydro-Electric.

Wheeling, W. Va.—Wheeling Traction Company, at annual stockholders' meeting January 29, decided to spend a million dollars to improve power plant in South Wheeling, erect a new repair shop on Wheeling Island, a new car barn at Glennova and add from 20 to 25 modern double truck cars. G. O. Nagle, general manager; W. A. Shirley, secretary-treasurer; T. H. Conderman, president.

Youngstown, O.—E. S. Haslan, engineer connected with the Pennsylvania State Water Supply Commission, has been selected to make surveys of Pymatuning swamp, which it is desired to drain. On his report will depend the commission's action regarding the reservoir plan that has been advocated. He has begun preliminary work with headquarters at Greenville and Linesville.

Sebring, O., (Mahoning county)—Sebring Water Supply Company has installed new pump; other improvements to follow. Water supply is drawn from Mahoning river.

Greenville, Pa.—Mercer Power Company contemplates erection of power plant, with sub-station improvements;

sub-station brick or concrete, steel truss roof, one story, 40x40 feet.

Lynchburg, Va.—C. W. Hancock & Sons, contractors, of this city, have been awarded contract for building sub-stations at Bluefield and Switchback, W. Va., for Appalachian Power Company, under management of Viele, Black-

well & Buck, engineers, New York. Contract estimated at \$100,000.

New York City.—United Electric Light & Power Company is to start construction early in February of a new power house at Two Hundred and First street and Amsterdam avenue, to cost approximately \$8,000,000. This company

Wanted, For Sale, Bargains.

WANTED

WANTED—1 yard crane, about 75-foot span, 220 volt, 10-ton lift, with about 300 feet of runway. Address Industrial World, Box 10-A, 105 Smithfield St., Pittsburgh, Pa.

WANTED—New or second-hand equipment as follows:

One 12" or 14" engine lathe, with 12-foot bed, for automobile work and general use.

One 16" or 18" engine lathe, for heavy work, to take automobile axles.

One 20" upright drill complete.

One radial drill, for use on a frame work, largest hole to be bored, estimated at 1 1/4".

One 25 H. P. twin cylinder gas engine.

One 25 kw. generator.

One electric drill (hand work).

One 16" or 18" lathe, 8-foot bed, to take about 5 feet between centers. Combination rest; power cross feed; back geared and hollow spindle.

One 22" or 24" drill press.

One 20" drill press, both hand and power feed.

One 24"x38" slide valve engine (left hand).

One 20"x36" Corliss engine (left hand).

One 600 H. P. Corcoran water heater (open type).

Address H. care Industrial World, Pittsburgh, Pa.

WANTED—Inquiries to purchase or sell

iron, steel, metals, machinery, contractors' equipment, iron buildings, and bridges. Address Thomas J. Pope, 59 Beekman street, New York.

WANTED—Second-hand large gear, about 4 feet or larger; about 4-inch bore; also smaller gears. Send list and prices. Address Potts Manufacturing Company, Camden, N. J.

POSITIONS WANTED

WANTED—Clean-out Young Man, 24 years old, of good habits, appearance and address, exceptional ability and ambition, desires to connect with a first class concern as an all-around man, for either inside or outside work. Opportunity desired more than

salary at present. Has technical and clerical experience as a draftsman and estimator, also spent some time in sales department as correspondence clerk and sales duties, with reputable concerns; excellent references. Address B. care Industrial World, Pittsburgh, Pa.

ASSISTANTS WANTED

WANTED—Assistant Purchasing Agent who has had experience in the iron and steel business. State experience, where last employed and salary expected. Address Box C., care Industrial World, Pittsburgh, Pa.

WANTED—Assistant Superintendent of Machine Department. One who has had experience in the building of engines and rolling mill machinery. State experience, where last employed and salary expected. Address Box D., care Industrial World, Pittsburgh, Pa.

WANTED—Salesman for Cement Coated Wire Nails. Must have had experience. Give reference, name and salary. All communications strictly confidential. American Steel Company, Park Building, Pittsburgh, Pa.

FOR SALE

FOR SALE—240 acres of pink dolomite limestone, along the Baltimore & Ohio Railroad. For further information, call or write to G. W. Engle, Charles-Town, Jefferson county, W. Va.

HYDRAULIC WHEEL PRESSES

29 Sizes. Capacities 50 to 400 tons

AIR COOLED AIR COMPRESSORS

6 Sizes. Capacities 4 cubic feet to 25 cubic feet.

Write for catalogues and prices.

E. R. CALDWELL & CO., Bradford, Pa.

Sweet's Steam Separators Surely Separate.

Deliver Steam 99 8-10 Dry. Remove 99 per cent of the Oil.

Sweet Separators are Receiver Separators with ample room for separation, steam storage and lots of water. They purify and dry the steam then store it above and independent of the water chamber. Water chamber is at the bottom and large. Thousands in use—many of them sold on repeat orders.

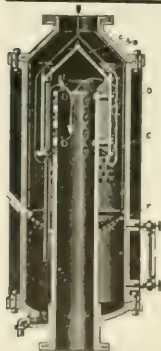
Sweet Separators keep Heating Systems, Boilers, Condensers, etc., free from oil and the expensive results that follow from the use of oil-laden steam. They deliver exhaust steam pure and ready for use in Laundries, Dye Houses, Ice plants, etc. Made in all styles and sizes from 50 to 24,000 lbs. in weight. Get the Catalog.

DIRECT SEPARATOR COMPANY,

702 GEDDES STREET, SYRACUSE, NEW YORK.

JAMES BONAR & CO., Sales Agents,

516 Frick Building, Pittsburgh, Pa.



is owned by the Consolidated Gas Company. Whether any financing will be necessary it not known as yet; probably the Consolidated Gas Company will advance the funds.

Cincinnati, O.—Union Gas & Electric Company, Elm and Colerain avenue, took out permit for brick and concrete distributing station to cost \$12,000.

Edwardsville, Ill.—H. J. Pekinpaugh and Paul J. Scheller, of Edwardsville Gas Company, secured site for gas holder to be built by company. Contracts not yet let.

Edwardsville, Ill.—Howard Feutz president Highland Marble Company, Highland, Ill., closed a deal with the commissioners of the Silver Creek Levee & Drainage District at Edwardsville for improvements to prevent the creek inundating 2,000 acres of land. Nine miles of curves in the creek will be reduced to less than three miles by a new channel. About 20,000 cubic yards of earth will be excavated at a cost of 13 cents a yard.

Morgantown, W. Va.—J. Cal Gynn, representing the Kuhn interests of Pittsburgh, promoters of the Cheat river power project, is running a survey with object of turning the course of the Cheat into Decker's creek during the construction of the dams. The diverting of the Cheat's course will necessitate a cut of $4\frac{1}{2}$ miles.

Public Works.

Salem, O.—Director of Public Service is taking bids on \$50,000 sewage disposal plant; bids close February 14. L. E. Chapin, Frick building, Pittsburgh, engineer.

Toledo, O.—Ordinance has been passed to provide for the issuing of bonds of the city of Toledo for \$150,000 for waterworks. John M. Babcock, clerk of council.

Batavia, O.—Architect A. R. James, 500 Bell Block, Cincinnati, has plans under way for a three-story brick armory building 28x93 feet and another building 60x107 feet for the State Armory Board. Bids will be taken about February 7.

Monongahela City, Pa.—The W. G. Wilkins Company, 200 Ninth street, Pittsburgh, has plans for an armory to be built for the State Armory Board, Harrisburg, to cost \$25,000.

Cincinnati, O.—Architects Tietig & Lee, Lyric Theatre building, are preparing plans for a tuberculosis hospital for the Board of Hospital Commissioners, City Hall. A group of 25 buildings will be erected at a cost of \$350,000.

Youngstown, O.—City engineer's department will submit to county commis-

[Continued on Page vi.]



2-5 12)

Jeffrey Power Transmission Machinery for Mill and Factory Equipment — a complete and modern line.

Adjustable Ball and Socket Drop and Post Hangers. They are of the latest design and are carefully fitted to insure perfect adjustment and shaft alignment. Carried in stock at our factory and by dealers.

Our New Power Transmission Catalog No 50, will be mailed free to users of Transmission Machinery.

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FOR

Tungsten Lamps

DOUBLEDAY-HILL ELECTRIC CO.

919 LIBERTY AVENUE,

PITTSBURGH, PA.

Complete Electrical Equipment

LOWEST PRICES—QUALITY CONSIDERED

Ask the Expert

¶ If you are having trouble with your power plant and find your power is costing more than it should, Call 3200 Grant, Contract Department, and have one of our power expert help you solve the problem. His services and advice will cost you nothing.

The Allegheny County Light Co.

435 Sixth Avenue,

Pittsburgh, Pa.

CUTLER-HAMMER

Controllers For Large Motors

The first electrically-operated elevating table in the United States was Controlled by a Cutler-Hammer 150-H. P. controller. This was at the Ohio Works, Youngstown, of the Carnegie Steel Co.

Since then we have installed apparatus in practically every electrically-operated steel plant in the country.

For rail mills, shear and blooming mill tables, roughing rolls, hot saws, billet shears, conveyors, skip hoists, unloaders, leg rotation, etc., etc., Cutler-Hammer Control has been adapted. Years of successful service indicate the correctness of the design.

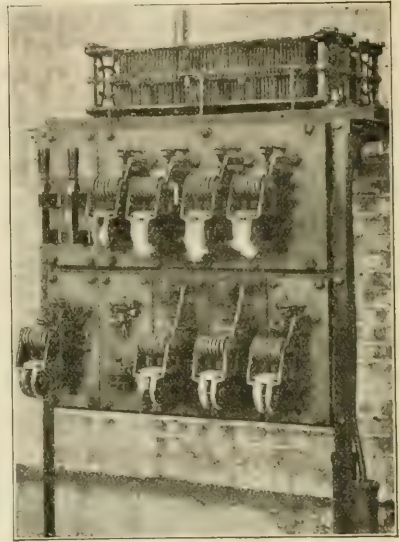
We can also furnish manual, automatic or remote control apparatus for pumps, fans, cranes, or any motor-driven machine.

Put Your Motor Control Problems up to Cutler-Hammer

We have been designing and manufacturing electric controlling devices exclusively for nearly 20 years. Our files contain more data on motor control than can be found elsewhere. We build all types of control apparatus from the small hand-operated rheostat and speed regulator to the large magnetic contactor switch panels of several thousand horsepower capacity.

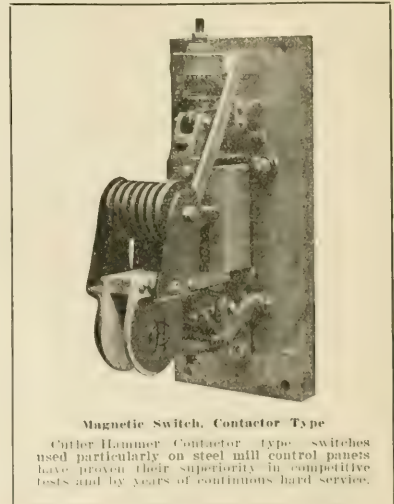
In our engineering department we have specialists on steel mill apparatus who are pioneers in this work. They designed the control panel for the first motor-operated elevating table referred to above and have been in touch with every development since.

The advice of our engineers is at your service. They can tell you what has been done and what can be done. You will save time by putting your control problems up to Cutler-Hammer.



75 H. P. Rail Mill Table Controller
Illinois Steel Co., Gary.

Photographed when auxiliary contacts were opening the circuits, showing blowout of arcs.



Magnetic Switch, Contactor Type

Cutler-Hammer Contactor Type switches used particularly on steel mill control panels have proven their superiority in competitive tests and by years of continuous hard service.

THE CUTLER-HAMMER MFG. CO.

MILWAUKEE

NEW YORK: Hudson Terminal, 100th Street

CHICAGO: Peoples Gas Bldg.

PITTSBURGH: Farmers' Bank Building

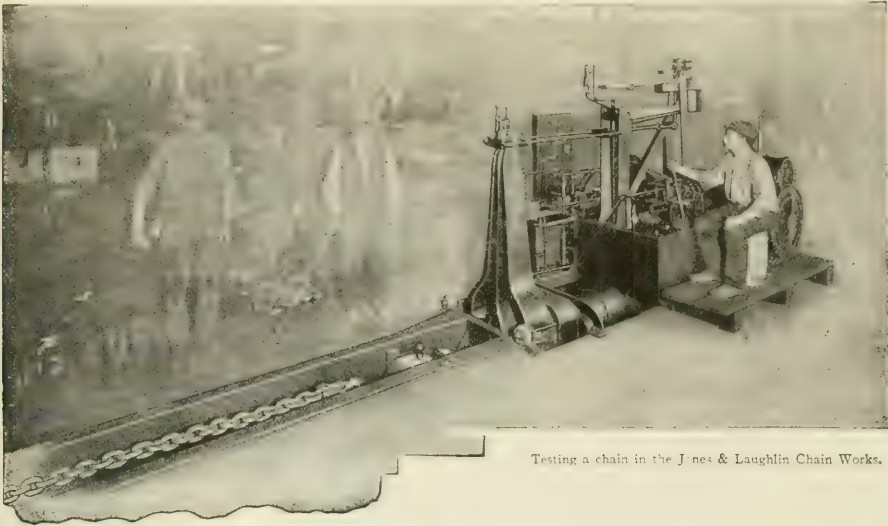
BOSTON: 178 Federal Street

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PITTSBURGH

to city sewer system and specifications for grade crossing elimination which were originally outlined by Erie Railroad.

Wheeling, W. Va.—City Engineer Baehr has reported to city board of control on municipal electric lighting project. Subject held in abeyance.

Jamestown, N. Y.—The water commissioners have employed Chester & Fleming, consulting engineers, Union Bank building, Pittsburgh, to prepare plans for and superintend the construction of a reinforced concrete reservoir, connections from reservoir to and reinforcement of their distributing system.

Canal Dover, O.—Village of Baltic (Tuscarawas county) may install a water works system. The committee consists of Fred Bartlemeh, H. C. Gerber and J. M. Knecht.

Chicago, Ill.—Proposals will be received by the U. S. army quartermaster at Fort Omaha, Neb., till February 15, for the construction of a filtration plant at that post. Plans and specifications at sioners February 6 plans for extension office of Col. John L. Clem, chief quartermaster, Federal building, Chicago.

Jefferson City, Mo.—State Board of Prison Inspectors accepted plans and specifications for new \$350,000 cell building authorized by Legislature, which will house when completed 600 convicts. H. H. Hohenschild, of Rolla, and Harry Clymer, of St. Louis, are the architects. Only \$150,000 of the money is available.

St. Louis, Mo.—Maxime Reber, president of Board of Public Improvements has approved plans for abolition of grade crossings within city limits, to cost \$7,600,000.

Covington, Ky.—Property owners at Latonia, Ky., are urging that city of Covington build emergency water main into Latonia district. Bond issue is to be voted on.

Boilers, Power Plants, Etc.

Springfield, O.—Architect William K. Shilling, Bushnell Annex building is preparing plans for steam heating system to be installed in St. Raphael's Roman Catholic Church building; bids March 1.

Springfield, O.—The Crowell Publishing Company intends building a power plant one-story high, brick construction from plans made by Frank Hill Smith, Ribbold building, Dayton. Plans ready about March 1.

Erie, Pa.—Bids will probably be taken about February 25 for the erection of the proposed power plant for the Erie Company on Front street. The building will be two stories, 100x200 feet.

Cincinnati—Estimates will be received

in this city until February 14 by Consulting Engineer Walter G. Franz for a complete new water and fire protection system, the former being of the underground type, for Tuskegee Institute in Alabama. The work will cover several square miles. The heating and power portion of the commission will come up for consideration some time in the spring.

Concrete, Brick, Clay.

Edwardsville, Ill.—Richards Brick

Company has accepted plans for enlargement; contracts to be let shortly. A smokestack 165 feet high will be constructed. Included in the improvements will be a continuous kiln, capacity 12,000,000 bricks a year.

Cleveland, O.—Announcement has just been made that one of the largest building brick contracts landed by an Ohio brick company in recent years, has been secured by the Hydraulic-Press Brick Company, of Cleve-

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land. This company will furnish all the brick and terra cotta work in the group buildings of the National Electric Lamp Association, which is to be built in Cleveland.

Zanesville.—Construction has been begun on the new plant of the E. B. Townsend Brick Contracting Company. Paving and face brick will be made in the new plant, which will cover a site 70 by 120 feet.

Wheeling, W. Va.—Warwick China Company stockholders authorized issuing of \$25,000 new preferred stock to finance plant extensions. C. E. Jackson, president; O. P. McKee, secretary.

Auto, Implement Etc.

Beaver Falls, Pa.—The Krupps Motor Company, 4139 Jenkins Arcade building, Pittsburgh, is having plans prepared by Architects Irvin & Witherow, Keystone Bank building, Pittsburgh, for the erection of a group of buildings for manufacturing purposes. The buildings will be two stories, built of concrete construction.

Wheeling, W. Va.—Secretary Roy B. Naylor, Wheeling Board of Trade, announces that board has closed contract with the Hercules Tire & Rubber Company, of Pittsburgh, to move its plant to Wheeling. Company has secured fire-proof building at Warwood and will move machinery into the plant. Extensions are to be built.

Chambersburg, Pa.—Cumberland Valley railroad will build new passenger station and administration building here; shops will be increased to take care of increase in amount of work.

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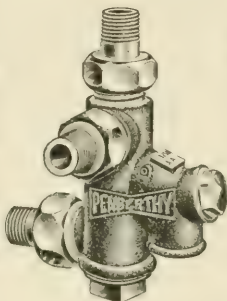
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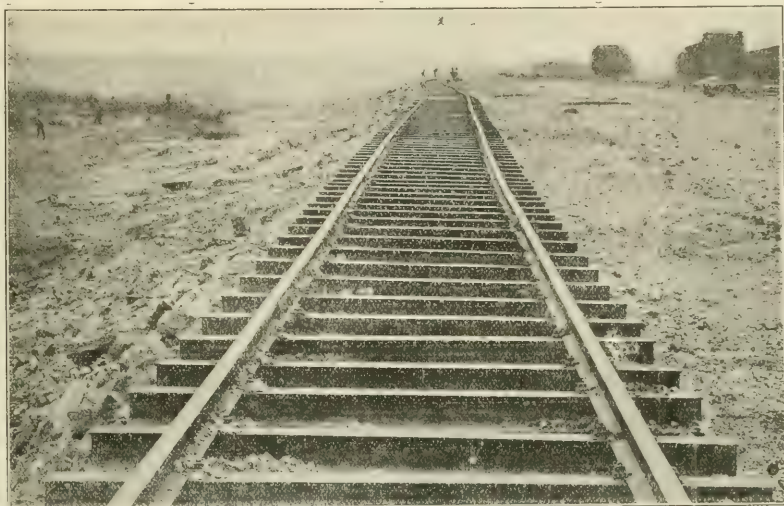
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Mesta Machine Co. Pittsburgh

AIR HOISTS.

Baird Machinery Co. Pittsburgh
Northern Eng. Works ... Detroit, Mich.

AIR PRESSURE TANKS.

Meehan Boiler & Con. Co. Lowellville, O.
National Tube Company Pittsburgh
Riter-Conley Mfg. Co. Pittsburgh

ALUMINUM.

Aluminum Co. of America ... Pittsburgh

ANGLE SHEARS.

Standard Bridge Tool Co. Pittsburgh

ANNEALING BOXES.

Mesta Machine Co. Pittsburgh
Knox Pressed & Welded Steel
Company Pittsburgh

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United Eng. & Fdry Co. Pittsburgh

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Jeffrey Manufacturing Co. Columbus, O.
Link-Belt Company Philadelphia

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Otis Elevator Company Pittsburgh

AUTOMATIC TRAPS.

McAuley Automatic Trap Co. Pittsburgh

AXLES.

Carnegie Steel Company Pittsburgh

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Oswald, R. W. Pittsburgh

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Cutler-Hammer Mfg. Co. Milwaukee

BEAMS.

Carnegie Steel Company Pittsburgh
Jones & Laughlin Steel Co. Pittsburgh
Riter-Conley Mfg. Co. Pittsburgh
W. N. Kratzer & Co. Pittsburgh

BELLS and GONGS (Seamless Steel.)

National Tube Company Pittsburgh

BELTING.

Baird Machinery Co.....Pittsburgh
 Jeffrey Manufacturing Co..Columbus, O.
 Link-Belt Company Philadelphia
 Oswald, R. W. Pittsburgh

BELT CONVEYORS.

Jeffrey Manufacturing Co..Columbus, O.
 Link-Belt Company Philadelphia
BENDING MACHINES-HYDRAULIC
 Chambersburg Engineering Com-
 pany Chambersburg, Pa.
 Standard Bridge Tool Co....Pittsburgh

BENDING ROLLS.

Standard Bridge Tool Co....Pittsburgh

BLAST FURNACE BRICK.

Stowe-Fuller Co. Cleveland, O.

BLAST FURNACES.

Riter-Conley Mfg. Co. Pittsburgh

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Cutler-Hammer Mfg. Co.....Milwaukee

BLOWING ENGINES.

Mackintosh, Hemphill & Co..Pittsburgh
 Mesta Machine Company Pittsburgh
 Southwark Foundry & Machine
 Company Philadelphia

BLAST FURNACE BRICK.

Kier Fire Brick Company Pittsburgh
 Bickford Fire Brick Company.....
Curwensville, Pa.

BOILERS.

H. J. Koontz Pittsburgh
 Meehan Boiler & Con. Co..Lowellville, O.

BOILER FITTINGS.

National Tube Company Pittsburgh

BOILER TUBES.

National Tube Company Pittsburgh

BOILER SETTINGS.

Kier Fire Brick Company Pittsburgh
 Bickford Fire Brick Company.....
Curwensville, Pa.

BORING MACHINES.

Baird Machinery Co.....Pittsburgh

BRAKES (Electric.)

Cutler-Hammer Mfg. Co.....Milwaukee

BRAKE SOLENOIDS.

Cutler-Hammer Mfg. Co.....Milwaukee

BRASS AND BRONZE CASTINGS.

Mesta Machine Company Pittsburgh
 United Eng. & Fdry Co.....Pittsburgh

BRAZING.

Linde Air Products Co., The.....
Buffalo, N. Y.

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Jones & Laughlin Steel Co....Pittsburgh
 Meehan Boiler & Con. Co..Lowellville, O.
 Riter-Conley Mfg. Co. Pittsburgh
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BRIDGE BUILDERS.

Riter-Conley Mfg. Co. Pittsburgh

BUCKETS.

Industrial Works Bay City, Mich.
 Jeffrey Manufacturing Co..Columbus, O.

BUCKETS (Coal.)

Jeffrey Manufacturing Co..Columbus, O.
 Link-Belt Company Philadelphia

BUCKETS (Ore.)

Jeffrey Manufacturing Co..Columbus, O.
 Link-Belt Company Philadelphia

BUCKETS (Self Filling.)

Jeffrey Manufacturing Co..Columbus, O.
 Link-Belt Company Philadelphia

BUILDINGS.

Riter-Conley Mfg. Co.....Pittsburgh

BUILDING BRICK.

West Va. Fire Clay Mfg. Co..Pittsburgh

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 pany Pittsburgh

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 pany Chambersburg, Pa.
 Connellsville Mfg. & Mine Supply
 Company Connellsville, Pa.
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 pany Hollidaysburg, Pa.
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.....Curwensville, Pa.
Clearfield Fire Brick Co.....Clearfield, Pa.
Dover Fire Brick Co.....Cleveland, O.
Kier Fire Brick Company Pittsburgh
Pittsburgh-Buffalo Co. Pittsburgh
Jos. Soisson Brick Co..Connellsville, Pa.
Sandy Ridge Fire Brick Company.....
.....Sandy Ridge, Pa.
Stowe-Fuller Co. Cleveland, O.
United Fire Brick Co..Uniontown, Pa.
West Va. Fire Clay Mfg. Co..Pittsburgh

FIRE ESCAPES.

W. N. Kratzer & Co. Pittsburgh

FIRE PROOFING.

W. N. Kratzer & Co. Pittsburgh

FIRE PUMP STARTERS.

Cutler-Hammer Mfg. Co.....Milwaukee

FITTINGS.

National Tube Company Pittsburgh

FITTINGS (Malleable and Cast Iron.)

National Tube Company Pittsburgh

FLAG STAFFS.

National Tube Company Pittsburgh

FLANGES (Cast and Malleable.)

National Tube Company Pittsburgh
FLATS.

Standard Gauge Steel Company
.....Beaver Falls, Pa.

FLANGING CLAMPS.

Chambersburg Engineering Company Chambersburg, Pa.
Standard Bridge Tool Co.....Pittsburgh
FLANGING.

Knox Pressed & Welded Steel
Company Pittsburgh

FINISHED MACHINE KEYS.

Standard Gauge Steel Company
.....Beaver Falls, Pa.

FLIGHT CONVEYORS.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company Philadelphia

FLOAT SWITCHES.

Cutler-Hammer Mfg. Co.....Milwaukee

FORGE AND FURNACE LININGS.

Bickford Fire Brick Company.....
.....Curwensville, Pa.

FORGINGS.

Carnegie Steel Company Pittsburgh
Heppenstall Forge & Knife Com-
pany Pittsburgh
Jeffrey Manufacturing Co..Columbus, O.
Mesta Machine Company Pittsburgh
W. N. Kratzer & Co. Pittsburgh

FORGINGS PRESSES.

Chambersburg Engineering Com-
pany Chambersburg, Pa.
Mesta Machine Co. Pittsburgh
United Eng. & Fdry Co.....Pittsburgh

FOUNDRY EQUIPMENTS.

Baird Machinery Co.....Pittsburgh
Meehan Boiler & Con. Co..Lowellville, O.

FOUNDRY FIRE BRICK.

Bickford Fire Brick Company.....
.....Curwensville, Pa.
Dover Fire Brick Co.....Cleveland, O.
Kier Fire Brick Company Pittsburgh
Stowe-Fuller Co. Cleveland, O.

FRICITION CLUTCHES.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company Philadelphia

FURNACES.

American Stoker Co. New York

FURNACE BUILDERS.

Laughlin, Alex & Co. Pittsburgh
Geo. J. Hagan Pittsburgh
G. W. McClure Son & Co..Pittsburgh
Kennedy, Julian Pittsburgh
Morgan Construction Company.....
.....Worcester, Mass.
Schlieper-Daag Company.....Pittsburgh
The S. R. Smythe Co. Pittsburgh
Wm. Swindell & Bros. Pittsburgh

GALVANIZED SHEETS.

McCollough Iron Co..Wilmington, Del.

GAS AND GASOLINE ENGINES.

Standard Scale & Supply Co..Pittsburgh

GAS-CLEANING PLANTS.

The Smith Gas Power Co..Lexington, O.

GAS ENGINES.

Mesta Machine Company Pittsburgh

GAS HOLDERS.

Riter-Conley Mfg. Co.....Pittsburgh

GAS PRODUCERS.

Geo. J. Hagan Pittsburgh
 Laughlin, Alex & Co. Pittsburgh.
 Morgan Construction Company.....
Worcester, Mass.
 Riter-Conley Mfg. Co. Pittsburgh
 Schleper-Dane Company.....Pittsburgh
 The S. R. Smythe Co. Pittsburgh
 The Smith Gas Power Co. Lexington, O.
 Wm. Swindell & Bros. Pittsburgh

GAS MACHINERY.

Riter-Conley Mfg. Co. Pittsburgh

GAS WORKS CONSTRUCTION.

Riter-Conley Mfg. Co. Pittsburgh

GATE VALVES.

National Tube Company Pittsburgh

GEARING (Bevel, Mitre, Spur, etc.)

Link-Belt Company Philadelphia

GEARS.

Jeffrey Manufacturing Co. Columbus, O.
 Mesta Machine Company Pittsburgh

GENERATORS.

Crocker-Wheeler Co. Ampere, N. J.
 Doubleday-Hill Electric Co. Pittsburgh.

GERMAN SILVER

Shimer & Company, Inc. Pittsburgh

GIRDERS.

DeMoines Bridge & Iron Company
DeMoines, Ia.

Jones & Laughlin Steel Co. Pittsburgh
 Meehan Boiler & Con. Co. Lowellville, O.
 W. N. Kratzer & Co. Pittsburgh

GLOBE VALVES.

National Tube Company Pittsburgh

GRAB BUCKETS.

Jeffrey Manufacturing Co. Columbus, O.

GRATES.

American Stoker Co. New York

GRAIN TANKS.

Standard Steel Tank & Manufacturing
 Company Pittsburgh, Pa.

GRAIN ELEVATORS AND STORAGE TANKS.

Riter-Conley Mfg. Co. Pittsburgh

GROUND FIRE CLAY.

West Va. Fire Clay Mfg. Co. Pittsburgh

GUILLOTINE SHEARS.

Standard Bridge Tool Co. Pittsburgh

HEAD FRAMES.

Riter-Conley Mfg. Co. Pittsburgh

HEADS (Flanged and Dished Boiler.)
 Riter-Conley Mfg. Co. Pittsburgh

HIGH SPEED PUNCHES.

Standard Bridge Tool Co. Pittsburgh

HOISTING ENGINES.

Otis Elevator Company Pittsburgh

HORIZONTAL DRILLS.

Baird Machinery Co. Pittsburgh

HORIZONTAL PUNCHES.

Standard Bridge Tool Co. Pittsburgh

HOT BLAST STOVE BRICK.

Stowe-Fuller Co. Cleveland, O.

HOT BLAST STOVES.

Bickford Fire Brick Company.....

.....Curwensville, Pa.
 G. W. McClure Son & Co. Pittsburgh

HOT METAL CARS.

Meehan Boiler & Con. Co. Lowellville, O.

HYDRAULIC ENGINEERS.

Chester & Fleming Pittsburgh, Pa.

HYDRAULIC MACHINERY.

Baird Machinery Co. Pittsburgh

Chambersburg Engineering Company
Chambersburg, Pa.

Mesta Machine Company Pittsburgh

HYDRAULIC PUMPS.

Chambersburg Engineering Company
Chambersburg, Pa.

HYDRAULIC VALVES AND FITTINGS.

Chambersburg Engineering Company
Chambersburg, Pa.

National Tube Company Pittsburgh

INJECTORS—AUTOMATIC.

Penberthy Injector Co. Detroit, Mich.

ICE TOOLS.

Standard Scale & Supply Co. Pittsburgh

IGNITION BATTERY RHEOSTATS.

Cutler-Hammer Mfg. Co. Milwaukee

INDUSTRIAL RAILWAYS.

Link-Belt Company Philadelphia

INSPECTION.

The Heinle Company Pittsburgh

Gulick-Henderson Co. Pittsburgh

IRON AND STEEL BARS.

Jones & Laughlin Steel Co. Pittsburgh

IRON FENCING.

W. N. Kratzer & Co. Pittsburgh

IRON ROOFS AND BUILDINGS.

Riter-Conley Mfg. Co. Pittsburgh

W. N. Kratzer & Co. Pittsburgh

"KEWANEE" UNIONS & SPECIAL TIES.

National Tube Company Pittsburgh

KILNS (Cement).

Riter-Conley Mfg. Co. Pittsburgh

LADLES.

Knox Pressed & Welded Steel
 Company Pittsburgh

Meehan Boiler & Con. Co. Lowellville, O.

LADLE BRICK.

West Va. Fire Clay Mfg. Co. Pittsburgh

LADLE LININGS.

Dover Fire Brick Co. Cleveland, O.

Stowe-Fuller Co. Cleveland, O.

LADLES (Steel).

Riter-Conley Mfg. Co. Pittsburgh

LATHES.

Baird Machinery Co. Pittsburgh

LIFTING MAGNETS.

Cutler-Hammer Mfg. Co. Milwaukee

LIMIT SWITCHES.

Cutler-Hammer Mfg. Co. Milwaukee

LINK-BELTING.

Jeffrey Manufacturing Co. Columbus, O.
 Link-Belt Company Philadelphia

LOCOMOTIVE CRANES.

Industrial Works Bay City, Mich.
 Link-Belt Company Philadelphia

LOCOMOTIVE FIRE BRICK

Bickford Fire Brick Company.....

.....Curwensville, Pa.

Dover Fire Brick Co. Cleveland, O.

Stowe-Fuller Co. Cleveland, O.

MACHINE BOLTS.

Riter-Conley Mfg. Co. Pittsburgh
MACHINE RACK.

Standard Gauge Steel Company
Beaver Falls, Pa.

MACHINE TOOLS.

Baird Machinery Co. Pittsburgh

H. J. Koontz Pittsburgh.

MACHINERY CASTINGS.

Wm. Swindell & Bros. Pittsburgh

MAGNESIA BRICK.

Stowe-Fuller Co. Cleveland, O.

MAGNESITE.

Stowe-Fuller Co. Cleveland, O.

MAGNETIC CLUTCHES.

Cutler-Hammer Mfg. Co. Milwaukee

MAGNETIC SEPARATORS.

Cutler-Hammer Mfg. Co. Milwaukee

MAGNETIC (Electric Lifting.)

Cutler-Hammer Mfg. Co. Milwaukee

MALLEABLE CASTINGS.

Jeffrey Manufacturing Co. Columbus, O.
 Link-Belt Company Philadelphia

MASTER SWITCHES.

Cutler-Hammer Mfg. Co. Milwaukee

MAXIMUM SILENT CHAIN.

Link-Belt Company Philadelphia

METAL CONFORMATION.

The Heinle Company Pittsburgh

METALLURGISTS.

Gulick-Henderson Co. Pittsburgh

MILLING MACHINES.

Baird Machinery Co. Pittsburgh

Standard Bridge Tool Co. Pittsburgh

MINE FANS.

Jeffrey Manufacturing Co. Columbus, O.

MINING MACHINERY & SUPPLIES.

C. O. Bartlett & Snow Co. Cleveland

Connellsville Mfg. & Mine Supply
 Company Connellsville, Pa.

Doubleday-Hill Electric Co. Pittsburgh.

Jeffrey Manufacturing Co. Columbus, O.

Meehan Boiler & Con. Co. Lowellville, O.

Phillips Mine & Mill Supply Com-
 pany Pittsburgh

MOTORS.

Crocker-Wheeler Co. Ampere, N. J.

Doubleday-Hill Electric Co. Pittsburgh.

MONEL METAL.

Shimer & Company, Inc. Pittsburgh

MULTIPLE PUNCHES.

Standard Bridge Tool Co. Pittsburgh

OIL REFINERY WORK.

Standard Steel Tank & Manufacturing Company Pittsburgh, Pa.

OIL REFINING PLANTS.

Riter-Conley Mfg. Co.....Pittsburgh

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Jeffrey Manufacturing Co., Columbus, O.

ORE CONCENTRATORS & SEPARATORS.

McLanahan Stone Machine Company Hollidaysburg, Pa.

ORE HANDLING MACHINERY.

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Jeffrey Manufacturing Co., Columbus, O.
Link-Belt Company Philadelphia

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The Linde Air Products Co....Buffalo

OXY-ACETYLENE WELDING AND CUTTING APPARATUS.

The Linde Air Products Co....Buffalo

PATENTS.

J. M. Nesbit Pittsburgh
Siggers & Siggers, Washington, D. C.

PAVING BRICK.

West Va. Fire Clay Mfg. Co., Pittsburgh

PAVING BLOCK.

West Va. Fire Clay Mfg. Co., Pittsburgh

"PECK" CARRIERS.

Link-Belt Company Philadelphia

PENSTOCKS.

Riter-Conley Mfg. Co. Pittsburgh
Standard Steel Tank & Manufacturing Company Pittsburgh, Pa.
Knox Pressed & Welded Steel Company Pittsburgh

PHOSPHOR BRONZE.

Shimer & Company, Inc.....Pittsburgh

PIG METALS (ORES, etc.)

McKeefrey & Co. Leontonia, O.

PIG IRON.

Shimer & Company, Inc.....Pittsburgh

PILLAR CRANES.

Industrial Works Bay City, Mich.
Northern Eng. Works ...Detroit, Mich.

PIPE AND PIPE FITTINGS.

Central Tube Co. Pittsburgh
National Tube Company Pittsburgh
U. S. Cast Iron & Pipe Foundry Company Scottsdale, Pa.

PIPE COILS.

National Tube Company Pittsburgh

PIPES (Riveted Steel).

Riter-Conley Mfg. Co.....Pittsburgh

PLATE WORK.

Knox Pressed & Welded Steel Company Pittsburgh
Meehan Boiler & Con. Co., Lowellville, O.
Riter-Conley Mfg. Co. Pittsburgh
Standard Steel Tank & Manufacturing Company Pittsburgh, Pa.

POLES (Tubing Steel.)

National Tube Company Pittsburgh

POWER PLANTS.

Doubleday-Hill Electric Co., Pittsburgh.
Mesta Machine Company ...Pittsburgh

PNEUMATIC TOOLS.

Connellsville Mfg. & Mine Supply Company Connellsville, Pa.
H. I. Koontz Pittsburgh.

PRESSES—DRILL AND DROP.

Baird Machinery Co.....Pittsburgh

PRESSURE REGULATORS.

Cutler-Hammer Mfg. Co.....Milwaukee

PULLEYS AND CLUTCHES.

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Jones & Laughlin Steel Co., Pittsburgh
Link-Belt Company Philadelphia
Mesta Machine Company Pittsburgh

PUMP CONTROLLERS.

Cutler-Hammer Mfg. Co.....Milwaukee

PUMPS.

Hall Steam Pump Co. Pittsburgh
Mesta Machine Company Pittsburgh

PUNCHES.

Standard Bridge Tool Co.....Pittsburgh
United Eng. & Fdry Co.....Pittsburgh

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Connellsville Mfg. & Mine Supply Company Connellsville, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Link-Belt Company Philadelphia
Phillips Mine & Mill Supply Company Pittsburgh

RADIAL DRILLS.

Standard Bridge Tool Co....Pittsburgh

RADIATORS.

National Tube Company Pittsburgh

RADIATORS (Staggered Tube Wrought).

National Tube Company Pittsburgh

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Link-Belt Company Philadelphia

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The Smith Gas Power Co., Lexington, O.

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Richardson Company Pittsburgh

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Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co., Pittsburgh.

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Linde Air Products Co., The.....
.....Buffalo, N. Y.

REPAIRING LOCOMOTIVES.

Linde Air Products Co., The.....
.....Buffalo, N. Y.

RESISTANCE GRIDS.

Cutler-Hammer Mfg. Co.....Milwaukee

RESISTANCE UNITS.

Cutler-Hammer Mfg. Co.....Milwaukee

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Mesta Machine Company Pittsburgh
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Knox Pressed & Welded Steel Company Pittsburgh

RIVETED WATER PIPE.

Standard Steel Tank & Manufacturing Company Pittsburgh, Pa.

RIVETERS.

Baird Machinery Co.....Pittsburgh
Chambersburg Engineering Company Chambersburg, Pa.
Standard Bridge Tool Co.....Pittsburgh

RIVETTING.

Linde Air Products Co., The.....
.....Buffalo, N. Y.

ROLL ALTERNATORS.

The Heinle Company Pittsburgh

ROLL DESIGNERS.

The Heinle Company Pittsburgh
Mesta Machine Co. Pittsburgh
Seaman Sleeth Co.....Pittsburgh, Pa.
United Eng. & Fdry Co.....Pittsburgh

ROLL LATHES.

Mesta Machine Company Pittsburgh
United Eng. & Fdry Co.....Pittsburgh

ROLLING MILL MACHINERY.

Crocker-Wheeler Co.....Ampere, N. J.
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Jeffrey Manufacturing Co., Columbus, O.
Mackintosh, Hemphill & Co., Pittsburgh
Mesta Machine Company Pittsburgh
Morgan Construction Company.....
.....Worcester, Mass.
Phillips & McLaren Co.....Pittsburgh
Seaman Sleeth Co.....Pittsburgh, Pa.
United Eng. & Fdry Co.....Pittsburgh
Wheeling Mould & Fdry. Co., Wheeling

ROLL TURNERS.

The Heinle Company Pittsburgh

ROLL TURNING TOOLS.

Heppenstall Forge & Knife Company Pittsburgh
Samuel Trethewey & Co. Pittsburgh
Seaman Sleeth Co.....Pittsburgh, Pa.

ROOF TRUSSES.

W. N. Kratzer & Co. Pittsburgh

ROPE COATING.

C. O. Bartlett & Snow Co.....Cleveland
ROPE TRANSMISSION.

C. O. Bartlett & Snow Co.....Cleveland
Jeffrey Manufacturing Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburgh
Link-Belt Company Philadelphia
Mesta Machine Company Pittsburgh

SAND.

Shimer & Company, Inc.....Pittsburgh

SAND HANDLING MACHINERY.

Jeffrey Manufacturing Co., Columbus, O.
Link-Belt Company Philadelphia

SANITARY ENGINEERS.

Chester & Fleming Pittsburgh, Pa.

SCALES.

Fairbanks Co., The Pittsburgh
Standard Scale & Supply Co., Pittsburgh

SCRAP METAL.

Koehler & Streng Pittsburgh

SCREENS.C. O. Bartlett & Snow Co.....Cleveland
Connellsville Mfg. & Mine Supply
Company Connellsville, Pa.**SCREW STOCK.**Standard Gauge Steel Company
.....Beaver Falls, Pa.**SECOND HAND MACHINERY.**Baird Machinery Co.....Pittsburgh
H. J. Koontz Pittsburgh.**SEWER PIPE AND FLUE LININGS**

West Va. Fire Clay Mfg. Co..Pittsburgh

SELF STARTERS.

Cutler-Hammer Mfg. Co.....Milwaukee

SHEARS.Mesta Machine Company Pittsburgh
Philips & McLaren Co. Pittsburgh
Wheeling Mould & Fdry. Co..Wheeling**SHEAVE WHEELS.**

Link-Belt Company Philadelphia

SHEET IRON AND STEEL.

McCullough Iron Co..Wilmington, Del.

SHELBY SEAMLESS STEEL MECHANICAL TUBING.

National Tube Company Pittsburgh

SILICA BRICK.Kier Fire Brick Company Pittsburgh
Stowe-Fuller Co. Cleveland, O.
United Fire Brick Co..Uniontown, Pa.**SNAP SWITCHES.**Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co..Pittsburgh.**SOLENOIDS.**Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co..Pittsburgh.**SOLENOID SWITCHES.**

Cutler-Hammer Mfg. Co.....Milwaukee

SOLID STEEL SHEAR KNIVES.Samuel Trethewey & Co. Pittsburgh
Heppenstall Forge & Knife Com-
pany Pittsburgh**SPACING TABLES.**

Standard Bridge Tool Co.....Pittsburgh

SPECIAL MACHINERY.

Standard Bridge Tool Co.....Pittsburgh

SPECIAL SHAPES.Standard Gauge Steel Company
.....Beaver Falls, Pa.**SPEED REGULATORS.**Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co..Pittsburgh.**SPINDLE DRILLS.**

Standard Bridge Tool Co.....Pittsburgh

SPLITTING SHEARS.

Standard Bridge Tool Co.....Pittsburgh

SPRING AND TOOL STEEL.

Wm. Jessop & Sons, Ltd.....New York

SPROCKET CHAINS.Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company Philadelphia**STACKS.**Standard Steel Tank & Manufactur-
ing Company Pittsburgh, Pa.**STAND PIPES.**Standard Steel Tank & Manufactur-
ing Company Pittsburgh, Pa.
Riter-Conley Mfg. Co.....Pittsburgh**STARTERS (Electric Motor.)**Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co..Pittsburgh.**STARTING RHEOSTATS.**Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co..Pittsburgh.**STEAM DROP HAMMERS.**Chambersburg Engineering Com-
pany Chambersburg, Pa.**STEAM HAMMERS.**Baird Machinery Co.....Pittsburgh
Chambersburg Engineering Com-
pany Chambersburg, Pa.
Samuel Trethewey & Co. Pittsburgh**STEAM PUMPS.**Connellsville Mfg. & Mine Supply
Company Connellsville, Pa.
Hall Steam Pump Co. Pittsburgh**STEAM TRAPS.**

McAuley Automatic Trap Co..Pittsburgh

STEEL BUILDING & STRUCTURALJeffrey Manufacturing Co..Columbus, O.
Jones & Laughlin Steel Co..Pittsburgh**STEEL CASTINGS AND FORGINGS**Chambersburg Engineering Com-
pany Chambersburg, Pa.
Mesta Machine Company Pittsburgh
Samuel Trethewey & Co. Pittsburgh
Wm. Jessop & Sons, Ltd.....New York**STEEL CASTING PLANTS.**

Wm. Swindell & Bros.....Pittsburgh.

STEEL DIES.

Samuel Trethewey & Co.....Pittsburgh.

STEEL MILL CONTROLLERS.

Cutler-Hammer Mfg. Co.....Milwaukee

STEEL CONSTRUCTION.Knox Pressed & Welded Steel
Company Pittsburgh
Riter-Conley Mfg. Co. Pittsburgh**STEEL TANKS AND TOWERS.**Knox Pressed & Welded Steel
Company Pittsburgh
Riter-Conley Mfg. Co.....Pittsburgh
Standard Steel Tank & Manufactur-
ing Company Pittsburgh, Pa.**STEEL CROSS TIES.**

Carnegie Steel Company Pittsburgh

STEEL MINE TIES.Carnegie Steel Company Pittsburgh
Jones & Laughlin Steel Co..Pittsburgh**STEEL OIL DERRICKS.**

Carnegie Steel Company Pittsburgh

STEEL SHEET PILING.Carnegie Steel Company Pittsburgh
Jones & Laughlin Steel Co..Pittsburgh**STEEL WHEELS.**

Carnegie Steel Company Pittsburgh

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STRAIGHTING MACHINES.Schleper-Dase Company.....Pittsburgh
Standard Bridge Tool Co.....Pittsburgh**STRUCTURAL IRON WORKS.**Jeffrey Manufacturing Co..Columbus, O.
Jones & Laughlin Steel Co..Pittsburgh
Meehan Boiler & Con. Co..Lowellville, O.
Riter-Conley Mfg. Co. Pittsburgh
W. N. Kratzer & Co. Pittsburgh**STRUCTURAL STEEL.**

Riter-Conley Mfg. Co.....Pittsburgh

STOKERS.

American Stoker Co. New York

SWITCHES (Electric).Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co..Pittsburgh.**SQUARES.**Standard Gauge Steel Company
.....Beaver Falls, Pa.**TANKS.**Jeffrey Manufacturing Co..Columbus, O.
Meehan Boiler & Con. Co..Lowellville, O.
Riter-Conley Mfg. Co. Pittsburgh
Knox Pressed & Welded Steel
Company Pittsburgh
Standard Steel Tank & Manufactur-
ing Company Pittsburgh, Pa.**TELPHERAGE.**Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company Philadelphia**TESTING MACHINES.**

Riehle Brothers Philadelphia

TILE (Fire Clay, Etc.)Bickford Fire Brick Company.....
.....Curwensville, Pa.
Kier Fire Brick Company Pittsburgh
Stowe-Fuller Co. Cleveland, O.**TILE (Locomotive).**Bickford Fire Brick Company.....
.....Curwensville, Pa.
Stowe-Fuller Co. Cleveland, O.**TIN PLATE MACHINERY.**Mackintosh, Hemphill & Co..Pittsburgh
Mesta Machine Company Pittsburgh
United Eng. & Fdry Co.....Pittsburgh
Northern Eng. Works....Detroit, Mich.**TRANSFORMERS.**

Crocker-Wheeler Co.....Ampere, N. J.

TRANSFER CRANES.Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company Philadelphia
McLanahan Stone Machine Com-
pany Holidaysburg, Pa.
Phillips Mine & Mill Supply Com-
pany Pittsburgh**TRANSMITTING MACHINERY.**C. O. Bartlett & Snow Co.....Cleveland
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company Philadelphia
Mesta Machine Company Pittsburgh.
TRANSMISSION TOWERS (Galv'd).
Riter-Conley Mfg. Co.....Pittsburgh**TOOL STEEL.**

Wm. Jessop & Sons, Ltd.....New York

**TREADLE OPERATED CONTROL-
LERS.**

Cutler-Hammer Mfg. Co.....Milwaukee

TROLLEY POLES.

National Tube Company Pittsburgh

TRUCKS.Phillips Mine & Mill Supply Com-
pany Pittsburgh**TUBES.**

National Tube Company Pittsburgh

TUYERE COCKS.

National Tube Company Pittsburgh

UNIONS ("Kewanee" and Flange).

National Tube Company Pittsburgh

VALVES.Homestead Valve Mfg. Co...Pittsburgh
Morgan Construction Company.....
Worcester, Mass.

National Tube Company Pittsburgh

VANADIUM STEEL.

Carnegie Steel Company Pittsburgh

VENTILATING FANS.Doubleday-Hill Electric Co..Pittsburgh
Jeffrey Manufacturing Co..Columbus, O**VERTICAL DEEP WELL PUMPS.**Connellsville Mfg. & Mine Supply
Company Connellsville, Pa**WATER AND GAS PIPES.**Central Tube Co. Pittsburgh
National Tube Company Pittsburgh
U. S. Cast Iron & Pipe Foundry
Company Scottsdale, Pa**WATER TUBE BOILERS.**

Meehan Boiler & Con. Co..Lowellville,O

**WELL POINTS AND WELL SUP-
PLIES.**

National Tube Company Pittsburgh

WELDING.Knox Pressed & Welded Steel
Company Pittsburgh**WELDING AND CUTTING APPA-
RATUS.**

The Linde Air Products Co...Buffalo

WHEELS.Phillips Mine & Mill Supply Com-
pany Pittsburgh**WIRE ROPE.**Doubleday-Hill Electric Co..Pittsburgh
Jeffrey Manufacturing Co..Columbus, O**WIRE WORK.**

W. N. Kratzer & Co. Pittsburgh

WRECKING PURPOSES.Linde Air Products Co., The.....
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Open Hearth and Crucible Steel Melting Furnaces.

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JULIAN KENNEDY,
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Three Pass Fire Brick Hot Blast Stoves. Also Two Pass Stoves.
—Center Combustion Chamber—

Open-Hearth Furnaces, Heating Furnaces, Soaking Pits All Kinds of Brick Work.

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(Cable Address McClure, Pittsburgh.)

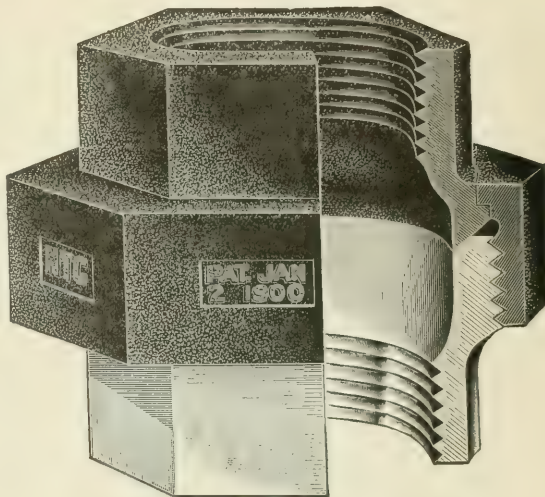
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"KEWANEE"

The Only Air-Tested Union

"KEWANEE" ADVANTAGES

- (a) Brass to Iron Thread Connection—
No Corrosion.
- (b) Brass to Iron Ball Joint Seat—
No Gasket.
- (c) ——— **TEST** ———
125 pounds Compressed Air, under water.
No Defective Fittings.
- (d) Solid Three-Piece Construction.
No Inserted Parts.
- (e) Easily Disconnected.
No Force Required.



"The Union With No Inserted Parts."

¶ A union, valve, or any fitting may look all right to the eye, but may fail when subjected to actual service, especially on air lines.

¶ A union, which may be steam or water tight, will frequently be useless on air or gas lines.

¶ In such service it is essential to use the "Kewanee" Union, which has been tested to 125 pounds compressed air pressure under water at the factory.

¶ This was the recent experience of the engineer of a large Foundry in the middle West,

where an Air Flow Meter had been installed. It failed to register properly, and to our representative the engineer explained the cause:

"We equipped the meter with 1/4-inch connections, including two ordinary unions and an unmarked plug cock. For days we experienced trouble with the meter and could not get satisfactory results, for we could not get the fittings air tight. We finally gave up, and replaced all fittings with "Kewanee" Unions and NTC Regrinding Valves. Then we had no more trouble."

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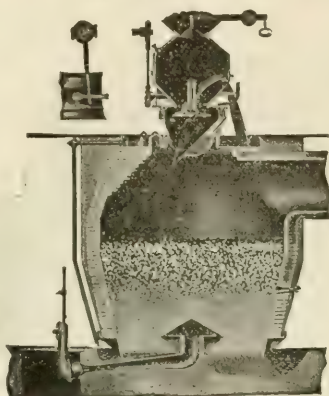
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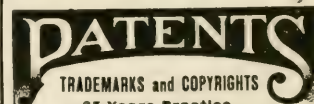
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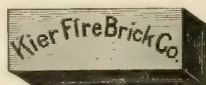
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Alphabetical Index of Advertising Patrons of Industrial World

Allegheny County Light Co. iii
Aluminum Company of America ...xviii

Baird Machinery Co. xix
Bickford Fire Brick Company xx
BRAINS Corporation

Carnegie Steel Company ix
Central Tube Company xix
Chambersburg Engineering Co. xix
Chester & Fleming xvi
Clearfield Fire Brick Company xx
Connellsville Mfg. & Mine Supply...179
Cutler-Hammer Clutch Company iv

Direct Separator Company 180
Doubleday-Hill Electric Co. iii
Dover Fire Brick Company xx
Duff, Samuel E. xvi

Gulick-Henderson Co. xviii

Hall Steam Pump Co. xxii
Hagan, Geo. J. xvi
Heinle Company, The xviii
Heppenstall Forge & Knife Co. xix
Homestead Valve Mfg. Co. xxii

Independent Ice Co. vii

Jeffrey Manufacturing Co. iii
Jessop, Wm. & Sons Co., Inc. xviii
Jones & Laughlin Steel Co. v

Kennedy, Julian xvi
Kier Fire Brick Company xx
Kratzer, W. N. & Co. xviii
Knox Pressed & Welded Steel Co. vii

Laughlin, Alex. & Company vi
Linde Air Products Co., The ii
Link-Belt Company xxii

Mesta Machine Company Cover
Meehan Boiler & Construction Co. viii
Morgan Construction Co. xviii
Mackintosh, Hemphill & Co. xxi
McClure, G. W., Sons & Co. xvi
McCullough Iron Company vii
McKeefrey & Company vii
McLanahan-Stone Machine Co. xix
McAuley Automatic Trap Co. 151

National Tube Co. xviii
Nesbit, J. M. xviii
Northern Engineering Works vii

Otis Elevator Company vii

Phillips & McLaren Company xxi
Phillips Mine & Mill Supply Co. xviii
Pittsburgh-Buffalo Company xxii
Penberthy Injector Company viii
Phoenix Engraving Company

Richardson & Company xviii
Riehle Brothers viii
Riter-Conley Mfg. Company ii

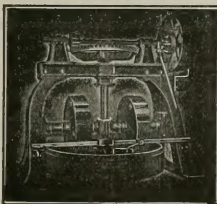
Schlieper-Daee Company xvi
Seaman-Sleeth Company vi
Shimer & Company vi
Siggers & Siggers xviii
Soisson, Jos., Fire Brick Co. xx
Southwark Foundry & Machine Co. vi
Standard Bridge Tool Co. xviii
Standard Scale & Supply Co. 179
Standard Steel Tank & Mfg. Co. vii
Stowe-Fuller Company xx
Smith Gas Power Co. xxii
Smythe, S. R. Company viii
Sweeney, James, Jr. 179
Swindell, Wm. & Bros. xvi

Trethewey, Samuel & Company xx

United Engineering & Foundry Co. xxii
United Fire Brick Company xx
U. S. Cast Iron Pipe & Fdry Co. viii

Westinghouse Machine Company xix
Wheeling Mold & Foundry Co. xix
West Va. Fire Clay Mfg. Co. xx

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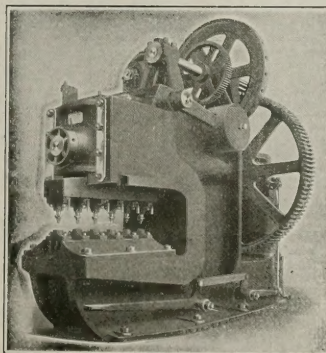


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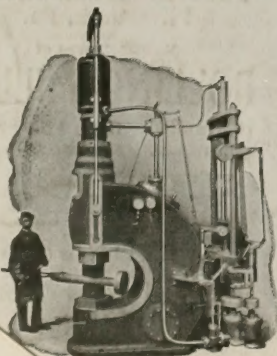
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